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

Identification of the substance/preparation

**1,3-BG (Industrial Quality)**

- **Chemical Name**: 1,3-Butylene glycol
- **CAS-No**: 107-88-0
- **EINECS-No**: 203-529-7
- **Use of the Substance / Preparation**: Intermediate, Monomer.

Company/Undertaking Identification

**OXEA Corporation**

1505 West LBJ Freeway, Suite 400
Dallas, TX 75234
USA

Product Information

Product Stewardship
FAX: +49 (0)208 693 2053
email: psq@oxea-chemicals.com

Emergency telephone number

+44 (0) 1235 239 670 (UK)
in USA, call 800 424 9300
outside USA, call 703 527 3887, collect calls accepted

2. Hazards identification

**GHS / CLP**

Basis for Classification

Based on present data no classification and labelling is required according to GHS, taking into account the national implementation (United Nations version 2011)

**USA**

Emergency Overview

**OSHA Regulatory Status**

This material is non-hazardous as defined by the American OSHA Hazard Communication Standard (29CFR 1910.1200).

Potential Health Effects

**Principle Routes of Exposure**

Inhalation, Eye contact, Skin contact, Ingestion.

**Main symptoms**

cough.

**Target Organ Effects**

Lung irritation
1,3-Butylene glycol
(Butane-1,3-diol)

Component | CAS-No | REACh-No | 1272/2008/EC
--- | --- | --- | ---
1,3-Butylene glycol (Butane-1,3-diol) | 107-88-0 | 01-2119455875-25-0000 | -

Component | 67/548/EEC | OSHA status | Concentration (%)
--- | --- | --- | ---
1,3-Butylene glycol (Butane-1,3-diol) | - | not hazardous | > 99,5

PBT and vPvB assessment
This substance is not considered to be persistent, bioaccumulating nor toxic (PBT), nor very persistent nor very bioaccumulating (vPvB)

4. First aid measures

**General advice**
Remove contaminated, soaked clothing immediately and dispose of safely. First aider needs to protect himself.

**Inhalation**
Keep at rest. Aerate with fresh air. When symptoms persist or in all cases of doubt seek medical advice.

**Eyes**
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses. Immediate medical attention is required.

**Skin**
Wash off immediately with plenty of water. When symptoms persist or in all cases of doubt seek medical advice.

**Ingestion**
Call a physician immediately. Do not induce vomiting without medical advice.

**Main symptoms**
cough.

**Special hazard**
Lung irritation.

**Notes to physician**
Treat symptomatically. If ingested, irrigate the stomach using activated charcoal.

5. Firefighting measures

OSHA Flammability classification
Combustible liquid Class III B
1,3-BG (Industrial Quality)

Revision Number 3.01

Material Safety Data Sheet

Revision Date 18-Mar-2013

Environmental precautions
Prevent further leakage or spillage. Do not discharge product into the aquatic environment without pretreatment (biological treatment plant).

Handling

Special protective equipment for fire-fighters
Fire fighter protection should include a self-contained breathing apparatus (NIOSH-approved or EN 133) and full fire-fighting turn out gear.

Special exposure hazards arising from the substance or preparation itself, its combustion products, or released gases
Under conditions giving incomplete combustion, hazardous gases produced may consist of:
- carbon monoxide (CO)
- carbon dioxide (CO2)
Combustion gases of organic materials must in principle be graded as inhalation poisons
Vapours are heavier than air and may spread along floors

Suitable extinguishing media
foam, dry chemical, carbon dioxide (CO2), water spray.

Extinguishing media which must not be used for safety reasons
Do not use a solid water stream as it may scatter and spread fire.

Special exposure hazards arising from the substance or preparation itself, its combustion products, or released gases
Under conditions giving incomplete combustion, hazardous gases produced may consist of:
- carbon monoxide (CO)
- carbon dioxide (CO2)
Combustion gases of organic materials must in principle be graded as inhalation poisons
Vapours are heavier than air and may spread along floors

Precautions for fire-fighting
Cool containers / tanks with water spray. Dike and collect water used to fight fire. Water run-off can cause environmental damage. Keep people away from and upwind of fire.

6. Accidental release measures

Personal precautions
Avoid contact with skin and eyes. Avoid breathing vapors or mists. Keep people away from and upwind of spill/leak. Ensure adequate ventilation, especially in confined areas. Keep away from heat and sources of ignition.
For emergency responders: Personal protection see section 8.

Environmental precautions
Prevent further leakage or spillage. Do not discharge product into the aquatic environment without pretreatment (biological treatment plant).

Methods for containment
Stop the flow of material, if possible without risk. Dike spilled material, where this is possible.

Methods for cleaning up
Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. If liquid has been spilt in large quantities clean up promptly by scoop or vacuum. Dispose of in accordance with local regulations. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours).

7. Handling and storage

Handling

Advice on safe handling
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. Provide sufficient air exchange and/or exhaust in work rooms.

Advice on protection against fire and explosion
Keep away from sources of ignition - No smoking. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). In case of fire, emergency cooling with water spray should be available. Ground and bond containers when transferring material.

Storage
Hygiene measures
When using, do not eat, drink or smoke. Take off all contaminated clothing immediately. Wash hands before
breaks and immediately after handling the product.

Respiratory protection
Respirator with filter for organic vapour. Use the indicated respiratory protection if the occupational exposure limit
is exceeded and/or in case of product release (dust). Equipment should conform to NIOSH, EN or other applicable
national standards.

Hand protection
Wear protective gloves. Recommendations are listed below. Other protective material may be used, depending on
the situation, if adequate degradation and permeation data is available. If other chemicals are used in conjunction
with this chemical, material selection should be based on protection for all chemicals present.

Suitable material  nitrile rubber

Suitable material  polyvinylchloride / nitrile rubber
Eye protection
Tightly fitting safety goggles. In addition to goggles, wear a face shield if there is a reasonable chance for splash to the face.

Skin and body protection
Impervious clothing. Wear face-shield and protective suit for abnormal processing problems.

Environmental exposure controls
If possible use in closed systems. If leakage can not be prevented, the substance needs to be suck off at the emersion point, if possible without danger. Observe the exposure limits, clean exhaust air if needed. If recycling is not practicable, dispose of in compliance with local regulations. Inform the responsible authorities in case of leakage into the atmosphere, or of entry into waterways, soil or drains.

9. Physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>liquid</td>
</tr>
<tr>
<td>Colour</td>
<td>colourless</td>
</tr>
<tr>
<td>Odour</td>
<td>weak</td>
</tr>
<tr>
<td>Molecular weight</td>
<td>90.12</td>
</tr>
<tr>
<td>Molecular formula</td>
<td>C4 H10 O2</td>
</tr>
<tr>
<td>Flash point</td>
<td>115 °C</td>
</tr>
<tr>
<td>Method</td>
<td>ISO 2719</td>
</tr>
<tr>
<td>Autoignition temperature</td>
<td>410 °C</td>
</tr>
<tr>
<td>Method</td>
<td>DIN 51794</td>
</tr>
<tr>
<td>Lower explosion limit</td>
<td>1.9 Vol %</td>
</tr>
<tr>
<td>Upper explosion limit</td>
<td>12.6 Vol %</td>
</tr>
<tr>
<td>Melting point/range</td>
<td>-57 °C</td>
</tr>
<tr>
<td>Boiling point/range</td>
<td>209 °C @ 1013 hPa</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td></td>
</tr>
<tr>
<td>Values [hPa]</td>
<td>5 / 9</td>
</tr>
<tr>
<td>Values [kPa]</td>
<td>9 / 9</td>
</tr>
<tr>
<td>Values [atm]</td>
<td>9 / 9</td>
</tr>
<tr>
<td>@ °C</td>
<td>20</td>
</tr>
<tr>
<td>@ °F</td>
<td>68</td>
</tr>
<tr>
<td>Density</td>
<td></td>
</tr>
<tr>
<td>Values [g/cm³]</td>
<td>1.0035</td>
</tr>
<tr>
<td>@ °C</td>
<td>20</td>
</tr>
<tr>
<td>@ °F</td>
<td>68</td>
</tr>
<tr>
<td>Method</td>
<td>DIN 51757</td>
</tr>
<tr>
<td>Refractive index</td>
<td>1.440 @ 20 °C</td>
</tr>
<tr>
<td>Viscosity</td>
<td>131.8 mPa*s @ 20 °C</td>
</tr>
<tr>
<td>Method</td>
<td>DIN 51562, dynamic</td>
</tr>
<tr>
<td>pH</td>
<td>6.1 (500 g/l in water @ 20 °C (68 °F))</td>
</tr>
<tr>
<td>Water solubility</td>
<td>miscible, OECD 105</td>
</tr>
<tr>
<td>log Pow</td>
<td>-0.9 (measured), OECD 117</td>
</tr>
<tr>
<td>Vapour density</td>
<td>3.2 (Air = 1) @ 20 °C (68 °F)</td>
</tr>
<tr>
<td>Surface tension</td>
<td>72.6 mN/m (1 g/l @ 20°C), OECD 115</td>
</tr>
<tr>
<td>Remarks</td>
<td>hygroscopic.</td>
</tr>
</tbody>
</table>

10. Stability and reactivity
Material Safety Data Sheet

10010
1,3-BG (Industrial Quality)

Revision Date 18-Mar-2013
Revision Number 3.01

Stability
Stable under recommended storage conditions.

Conditions to avoid
Avoid contact with heat, sparks, open flame and static discharge. Avoid any source of ignition.

Materials to avoid
strong oxidizing agents.

Hazardous decomposition products
No decomposition if stored and applied as directed.

11. Toxicological information

Principle Routes of Exposure  Inhalation, Eye contact, Skin contact, Ingestion

Acute toxicity
1,3-Butylene glycol (Butane-1,3-diol) (107-88-0)

<table>
<thead>
<tr>
<th>Routes of Exposure</th>
<th>Endpoint</th>
<th>Values</th>
<th>Species</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>LD50</td>
<td>22800 mg/kg</td>
<td>rat, male</td>
<td></td>
</tr>
<tr>
<td>Inhalative</td>
<td>LC0</td>
<td>290 mg/m³</td>
<td>rat, male</td>
<td>OECD 403</td>
</tr>
</tbody>
</table>

Irritation and corrosion
1,3-Butylene glycol (Butane-1,3-diol) (107-88-0)

<table>
<thead>
<tr>
<th>Target Organ Effects</th>
<th>Species</th>
<th>Result</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin</td>
<td>rabbit</td>
<td>No skin irritation</td>
<td></td>
</tr>
<tr>
<td>Eyes</td>
<td>rabbit</td>
<td>Mild eye irritation</td>
<td></td>
</tr>
</tbody>
</table>

Sensitization
1,3-Butylene glycol (Butane-1,3-diol) (107-88-0)

<table>
<thead>
<tr>
<th>Target Organ Effects</th>
<th>Species</th>
<th>Evaluation</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin</td>
<td>Human experience</td>
<td>not sensitizing</td>
<td>Patch-test</td>
</tr>
</tbody>
</table>

Subacute, subchronic and prolonged toxicity
1,3-Butylene glycol (Butane-1,3-diol) (107-88-0)

<table>
<thead>
<tr>
<th>Type</th>
<th>Dose</th>
<th>Species</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic toxicity</td>
<td>NOAEL: 5000 mg/kg/d</td>
<td>rat, male/female</td>
<td>Oral two-year</td>
</tr>
</tbody>
</table>

Carcinogenicity, Mutagenicity, Reproductive toxicity
1,3-Butylene glycol (Butane-1,3-diol) (107-88-0)

<table>
<thead>
<tr>
<th>Type</th>
<th>Dose</th>
<th>Species</th>
<th>Evaluation</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mutagenicity</td>
<td>rat, male/female</td>
<td>negative</td>
<td>in vivo</td>
<td></td>
</tr>
<tr>
<td>Reproductive toxicity</td>
<td>LOAEL 12000 mg/kg/d</td>
<td>rat</td>
<td>Oral</td>
<td></td>
</tr>
<tr>
<td>Reproductive toxicity</td>
<td>NOAEL 5000 mg/kg/d</td>
<td>rat</td>
<td>Oral</td>
<td></td>
</tr>
<tr>
<td>Developmental Toxicity</td>
<td>NOAEL 2500 mg/kg/d</td>
<td>rat</td>
<td>Oral</td>
<td>Maternal toxicity</td>
</tr>
<tr>
<td>Developmental Toxicity</td>
<td>NOAEL 12000 mg/kg/d</td>
<td>rat</td>
<td>Oral</td>
<td>Teratogenicity</td>
</tr>
<tr>
<td>Developmental Toxicity</td>
<td>LOAEL 5000 mg/kg/d</td>
<td>rat</td>
<td>Oral</td>
<td>Fetal toxicity</td>
</tr>
</tbody>
</table>
1,3-Butylene glycol (Butane-1,3-diol), CAS: 107-88-0
Main symptoms
cough.

Note
Special hazards or target organ effects are given as a generic warning, substance specific data is not available. Handle in accordance with good industrial hygiene and safety practice. Further details on substance data can be found in the registration dossier under the following link: http://apps.echa.europa.eu/registered/registered-sub.aspx.

12. Ecological information

Acute aquatic toxicity
1,3-Butylene glycol (Butane-1,3-diol) (107-88-0)

<table>
<thead>
<tr>
<th>Species</th>
<th>Exposure time</th>
<th>Dose</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daphnia magna (Water flea)</td>
<td>48h</td>
<td>EC50: &gt; 1000 mg/l</td>
<td>OECD 202</td>
</tr>
<tr>
<td>Desmodesmus subspicatus</td>
<td>72h</td>
<td>EC50: &gt; 1070 mg/l (Growth rate)</td>
<td>OECD 201</td>
</tr>
<tr>
<td>Oryzias latipes (Medaka)</td>
<td>96h</td>
<td>LC50: &gt; 100 mg/l</td>
<td>OECD 203</td>
</tr>
<tr>
<td>Activated sludge (bacteria)</td>
<td>3h</td>
<td>EC20: &gt; 100 mg/l</td>
<td>OECD 209</td>
</tr>
</tbody>
</table>

Long term toxicity
1,3-Butylene glycol (Butane-1,3-diol) (107-88-0)

<table>
<thead>
<tr>
<th>Type</th>
<th>Species</th>
<th>Dose</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reproductive toxicity</td>
<td>Daphnia magna (Water flea)</td>
<td>EC50: &gt; 85 mg/l/21d</td>
<td>OECD 202</td>
</tr>
</tbody>
</table>

1,3-Butylene glycol (Butane-1,3-diol), CAS: 107-88-0
Biodegradation
81 % (29 d), activated sludge (domestic), aerobic, non-adapted, OECD 301 B.

PBT and vPvB assessment
This substance is not considered to be persistent, bioaccumulating nor toxic (PBT), nor very persistent nor very bioaccumulating (vPvB)

Note
Avoid release to the environment.

13. Disposal considerations

Product Information
Disposal required in compliance with all waste management related state and local regulations. The choice of the appropriate method of disposal depends on the product composition by the time of disposal as well as the local statutes and possibilities for disposal.

Uncleaned empty packaging
Contaminated packaging should be emptied as far as possible and after appropriate cleansing may be taken for reuse.

14. Transport information

IMDG
Not restricted
15. Regulatory information

**OSHA Regulatory Status**
This material is non-hazardous as defined by the American OSHA Hazard Communication Standard (29CFR 1910.1200)

**GHS / CLP**

*Based for Classification*
Based on present data no classification and labelling is required according to GHS, taking into account the national implementation (United Nations version 2011). (See chapter 2)

**Water contaminating class (Germany)**

Water contaminating class 1

KBwS Number 5307
KBwS Classification Annex 3

**DI 96/82/EC (Seveso II)**

Category not subject

**International Inventories**

1,3-Butylene glycol (Butane-1,3-diol), CAS: 107-88-0

AICS (AU)
DSL (CA)
IECSC (CN)
EC-No. 2035297 (EU)
ENCS (2)-235 (JP)
ISHL (2)-235 (JP)
KECI KE-03787 (KR)
PICCS (PH)
TSCA (US)

16. Other information

**Revision Date** 18-Mar-2013
**Issuing date** 24-Jun-2013

**Training advice**
For effective first-aid, special training / education is needed.
Sources of key data used to compile the datasheet
Information contained in this safety data sheet is based on Oxea owned data and public sources deemed valid or acceptable. The absence of data elements required by ANSI or Annex II, Regulation 1907/2006/EC indicates, that no data meeting these requirements is available.

Further information for the safety data sheet
Changes against the previous version are marked by ***. Observe national and local legal requirements. For more information, other material safety data sheets or technical data sheets please consult the Oxea homepage (www.oxea-chemicals.com).
The annex is not required because the substance is not hazardous under REACH

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