SAFETY DATA SHEET

1. Identification
Product identifier Anti-Proton Pump (H,K-ATPase α Subunit) mAb

Other means of identification
Product code D031-3
Recommended use Research use only.
Recommended restrictions None known.

Manufacturer / Importer / Supplier / Distributor information
Manufacturer and Supplier (Asia)
Medical & Biological Laboratories (MBL) Co., Ltd.
4-5-3 Sakae, Naka-ku, Nagoya, Aichi 460-0008, Japan
Telephone number +81-52-238-1901 (Monday to Friday, 9 AM to 5 PM JST)
Fax +81-52-238-1440
E-mail sds-support@mbl.co.jp
URL http://www.mbl.co.jp/e/index.html
Contact person SDS Support

Supplier
MBL International Corporation
15A Constitution Way, Woburn, MA 01801, USA
Telephone number +1-800-200-5459, option 3
Fax +1-781-939-6963
E-mail tech@mblintl.com
URL http://www.mblintl.com/
Contact person Technical Service

2. Hazard(s) identification
Physical hazards Not classified.
Health hazards Not classified.
OSHA hazard(s) Not classified.

Label elements
Hazard symbol None.
Signal word None.
Hazard statement None.
Precautionary statement
Prevention Observe good industrial hygiene practices.
Response Wash thoroughly after handling.
Storage Store away from incompatible materials.
Disposal Dispose of waste and residues in accordance with local authority requirements.

Hazard(s) not otherwise classified (HNOC) None.

3. Composition/Information on ingredients
Mixtures

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glycerol (Glycerin)</td>
<td>56-81-5</td>
<td>50 - 60</td>
</tr>
</tbody>
</table>

Composition comments All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First aid measures
Inhalation
Move to fresh air. Get medical attention if discomfort develops or persists.

Skin contact
Remove contaminated clothing. Wash with soap and water. Get medical attention if irritation develops or persists. Wash contaminated clothing before reuse.
Eye contact
Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention if irritation develops or persists.

Ingestion
Drink plenty of water. Seek medical advice.

Most important symptoms/effects, acute and delayed
Irritation of eyes and mucous membranes. Mild skin irritation.

Indication of immediate medical attention and special treatment needed
Treat symptomatically.

General information
Get medical attention if any discomfort develops.

5. Fire fighting measures

Suitable extinguishing media

Unsuitable extinguishing media
None known.

Specific hazards arising from the chemical
Fire or high temperatures create: Carbon oxides.

Special protective equipment and precautions for firefighters
Self-contained breathing apparatus, operated in positive pressure mode and full protective clothing must be worn in case of fire.

Fire-fighting equipment/instructions
Move containers from fire area if you can do that without risk. Use water spray to cool unopened containers. Prevent entry to sewers and public waters.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures
Ensure adequate ventilation. Avoid inhalation of mist and contact with skin and eyes. For personal protection, see Section 8 of the SDS.

Methods and materials for containment and cleaning up
Dike far ahead of liquid spill for later disposal. Small Spills: Absorb spillage with suitable absorbent material. Clean contaminated surface thoroughly. After removal, flush contaminated area thoroughly with water. Large Spills: Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal.

Environmental precautions
Prevent further leakage or spillage if safe to do so.

7. Handling and storage

Precautions for safe handling
Provide adequate ventilation. Use work methods which minimize production of vapors and mists. Avoid inhalation of mist and contact with skin and eyes. Wash hands after handling. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities
Keep container tightly closed. Store away from incompatible materials.

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glycerol (CAS 56-81-5)</td>
<td>PEL</td>
<td>5 mg/m³</td>
<td>Respirable fraction.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15 mg/m³</td>
<td>Total dust.</td>
</tr>
</tbody>
</table>

US. ACGIH Threshold Limit Values

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glycerol (CAS 56-81-5)</td>
<td>TWA</td>
<td>10 mg/m³</td>
<td>Mist.</td>
</tr>
</tbody>
</table>

Biological limit values
No biological exposure limits noted for the ingredient(s).

Exposure guidelines
No exposure standards allocated.

Appropriate engineering controls
Provide adequate ventilation and minimize the risk of inhalation of vapors and mists.

Individual protection measures, such as personal protective equipment

Eye/face protection
Wear safety glasses.

Skin protection

### Hand protection
- Wear protective gloves. Nitrile gloves are recommended, but be aware that the liquid may penetrate the gloves. Frequent change is advisable. Suitable gloves can be recommended by the glove supplier.

### Other
- Wear appropriate clothing to prevent repeated or prolonged skin contact. Wear protective gloves. Nitrile gloves are recommended, but be aware that the liquid may penetrate the gloves. Frequent change is advisable. Suitable gloves can be recommended by the glove supplier.

### Respiratory protection
- In case of inadequate ventilation or risk of inhalation of vapors, use suitable respiratory equipment with combination filter (gas filter/dust filter). Seek advice from local supervisor.

### Thermal hazards
- Wear appropriate thermal protective clothing, when necessary.

### General hygiene considerations
- Handle in accordance with good industrial hygiene and safety practice. Wash hands after handling. Routinely wash work clothing and protective equipment to remove contaminants.

## 9. Physical and chemical properties

<table>
<thead>
<tr>
<th>Appearance</th>
</tr>
</thead>
</table>
| Physical state | Liquid.  
| Form | Viscous liquid.  
| Color | Colorless.  
| Odor | Odorless.  
| Odor threshold | Not available.  
| pH | Neutral.  
| Melting point/freezing point | Not available.  
| Initial boiling point and boiling range | Not available.  
| Flash point | Not available.  
| Evaporation rate | Not available.  
| Flammability (solid, gas) | Not applicable.  
| Upper/lower flammability or explosive limits |  
| Flammability limit - lower (%) | Not available.  
| Flammability limit - upper (%) | Not available.  
| Vapor pressure | Not available.  
| Vapor density | Not available.  
| Relative density | Not available.  
| Solubility(ies) | Soluble in water.  
| Partition coefficient ($n$-octanol/water) | Not available.  
| Auto-ignition temperature | Not available.  
| Decomposition temperature | Not available.  
| Viscosity | Not available.  

## 10. Stability and reactivity

| Reactivity | The product is non-reactive under normal conditions of use, storage and transport.  
| Chemical stability | Stable at normal conditions.  
| Possibility of hazardous reactions | Hazardous reactions do not occur.  
| Conditions to avoid | Strong heating. Contact with incompatible materials.  
| Incompatible materials | Strong oxidizing agents.  
| Hazardous decomposition products | None known.  

## 11. Toxicological information

### Information on likely routes of exposure
- **Ingestion**: Ingestion may cause irritation and malaise.
- **Inhalation**: Under normal conditions of intended use, this material is not expected to be an inhalation hazard.
<table>
<thead>
<tr>
<th>Symptom</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin contact</td>
<td>May cause skin irritation. Causes skin irritation.</td>
</tr>
<tr>
<td>Eye contact</td>
<td>May cause eye irritation on direct contact. Causes eye irritation.</td>
</tr>
<tr>
<td>Symptoms related to the</td>
<td>Irritation of eyes and mucous membranes. Mild skin irritation.</td>
</tr>
<tr>
<td>physical, chemical and</td>
<td></td>
</tr>
<tr>
<td>toxicological characteristics</td>
<td></td>
</tr>
</tbody>
</table>

### Information on toxicological effects

<table>
<thead>
<tr>
<th>Toxicity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity</td>
<td>Ingestion may cause irritation and malaise.</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>May cause skin irritation.</td>
</tr>
<tr>
<td>Serious eye damage/eye</td>
<td>May cause eye irritation on direct contact.</td>
</tr>
<tr>
<td>irritation</td>
<td></td>
</tr>
<tr>
<td>Respiratory sensitization</td>
<td>Not classified.</td>
</tr>
<tr>
<td>Skin sensitization</td>
<td>Not a skin sensitizer.</td>
</tr>
<tr>
<td>Germ cell mutagenicity</td>
<td>Not classified.</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>IARC not listed.</td>
</tr>
<tr>
<td>Reproductive toxicity</td>
<td>Not classified.</td>
</tr>
<tr>
<td>Specific target organ toxicity</td>
<td>Knowledge about health hazard is incomplete.</td>
</tr>
<tr>
<td>- single exposure</td>
<td></td>
</tr>
<tr>
<td>Specific target organ toxicity</td>
<td>Knowledge about health hazard is incomplete.</td>
</tr>
<tr>
<td>- repeated exposure</td>
<td></td>
</tr>
<tr>
<td>Aspiration hazard</td>
<td>Not classified.</td>
</tr>
</tbody>
</table>

### 12. Ecological information

| Ecotoxicity                  | The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills have a harmful or damaging effect on the environment. |
| Persistence and degradability| The product is biodegradable.                                               |
| Bioaccumulative potential    | The product is not bioaccumulating.                                          |
| Partition coefficient        |                                                                             |
| $n$-octanol / water (log $K_{ow}$) | Glycerol (CAS 56-81-5) = -1.76                                             |
| Mobility in soil             | Expected to be highly mobile in soil.                                       |
| Mobility in general          | The product is water soluble and may spread in water systems.               |
| Other adverse effects        | No data available.                                                          |

### 13. Disposal considerations

| Disposal instructions         | Dispose of in accordance with all applicable regulations. Do not discharge into drains, water courses or onto the ground. |
| Local disposal regulations    | Dispose of in accordance with local regulations.                            |
| Hazardous waste code          | Not regulated.                                                              |
| Waste from residues / unused products | Dispose of in accordance with local regulations.                           |
| Contaminated packaging        | Dispose of in same manner as unused product.                               |

### 14. Transport information

| DOT                           | Not regulated as a dangerous good.                                          |
| IATA                          | Not regulated as a dangerous good.                                          |
| IMDG                          | Not regulated as a dangerous good.                                          |
| Transport in bulk according    | Not applicable.                                                             |
| to Annex II of MARPOL 73/78   |                                                                             |
| and the IBC Code              |                                                                             |

### 15. Regulatory information

| US federal regulations        | This product is hazardous according to OSHA 29 CFR 1910.1200.               |
| TSCA Section 12(b) Export     | Not regulated.                                                              |
| Notification (40 CFR 707, Subpt. D) |                                                     |
| OSHA Specifically Regulated   | Not regulated.                                                              |
| Substances (29 CFR 1910.1001-1050) |                                                        |
| CERCLA Hazardous Substance    | Not listed.                                                                 |
| List (40 CFR 302.4)            |                                                                             |

Superfund Amendments and Reauthorization Act of 1986 (SARA)
Hazard categories

Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance
SARA 311/312 Hazardous chemical

No
Yes

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
Not regulated.
Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)
Not regulated.
Safe Drinking Water Act (SDWA)
Not regulated.
Drug Enforcement Administration (DEA), List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number
Not listed.
Drug Enforcement Administration (DEA), List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))
Not regulated.
DEA Exempt Chemical Mixtures Code Number
Not regulated.
Food and Drug Administration (FDA)
Not regulated.

US state regulations

This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

Massachusetts RTK - Substance List
Glycerol (CAS 56-81-5)
New Jersey Worker and Community Right-to-Know Act
Not regulated.
Pennsylvania RTK - Hazardous Substances
Glycerol (CAS 56-81-5)
Rhode Island RTK
Glycerol (CAS 56-81-5)
California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT)
Not listed.

International Inventories

Country(s) or region

Inventory name

On inventory (yes/no)*

Australia
Australian Inventory of Chemical Substances (AICS)
Yes
Canada
Domestic Substances List (DSL)
Yes
Canada
Non-Domestic Substances List (NDSL)
No
China
Inventory of Existing Chemical Substances in China (IECSC)
Yes
Europe
EC Inventory
Yes
Japan
Inventory of Existing and New Chemical Substances (ENCS)
Yes
Korea
Existing Chemicals List (ECL)
Yes
New Zealand
New Zealand Inventory
Yes
Philippines
Philippine Inventory of Chemicals and Chemical Substances (PICCS)
Yes
United States & Puerto Rico
Toxic Substances Control Act (TSCA) Inventory
Yes

* A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s). A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information

Issue date
09/28/2011
Revision date
09/30/2016
Version
10
Further information
Not available.
References
IUCLID
Disclaimer
This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.