Section 1: PRODUCT AND COMPANY IDENTIFICATION

Product Identifier

Product Name
SEAP Substrate Solution

Other means of identification

Product Code
S4864
Registration number
No information available

Recommended use of the chemical and restrictions on use

Identified uses
For research use only. Not for use in diagnostic procedures.

Uses advised against
No information available.

Details of the supplier of the safety data sheet

Supplier
Japan:
Takara Bio Inc.
Nojihigashi 7-4-38
Kusatsu, Shiga 525-0058, Japan
Phone: +81.77.565.6972
Web: www.takara-bio.com

China:
Takara Biomedical Technology (Beijing) Co., Ltd.
Life Science Park, 22 KeXueYuan Road, Changping District,
Beijing 102206, China
Phone: +86 10 8072 0980
Web: www.takara.com.cn

Korea:
Takara Korea Biomedical Inc.
Seoul 08506, Korea
Phone: +82 2 2081 2525
Web: www.takara.co.kr

Emergency telephone number

Emergency telephone
In case of emergency, call PERS (Professional Emergency Resource Services)
1-800-633-8253 (US) or 801-629-0667 (international).

Section 2: HAZARDS IDENTIFICATION

Classification of the substance or mixture

<table>
<thead>
<tr>
<th>Classification</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin corrosion/irritation</td>
<td>2</td>
</tr>
<tr>
<td>Serious Eye Damage/Eye Irritation</td>
<td>1</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>2</td>
</tr>
<tr>
<td>Reproductive Toxicity</td>
<td>2</td>
</tr>
<tr>
<td>Specific Target Organ Toxicity (Single Exposure)</td>
<td>1</td>
</tr>
<tr>
<td>Specific Target Organ Toxicity (Repeated Exposure)</td>
<td>1</td>
</tr>
</tbody>
</table>
S4864 - SEAP Substrate Solution

Acute Aquatic Toxicity Category 2
Chronic Aquatic Toxicity Category 2

Label elements

Signal Word
Danger

Hazard Statements
H315 - Causes skin irritation
H318 - Causes serious eye damage
H351 - Suspected of causing cancer
H361 - Suspected of damaging fertility or the unborn child
H370 - Causes damage to organs
H372 - Causes damage to organs through prolonged or repeated exposure
H411 - Toxic to aquatic life with long lasting effects

Precautionary Statements - Prevention
Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Wash face, hands and any exposed skin thoroughly after handling. Do not breathe dust/fume/gas/mist/vapors/spray. Do not eat, drink or smoke when using this product. Avoid release to the environment.

Precautionary Statements - Response
• IF exposed: Call a POISON CENTER or doctor/physician
• IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
• Immediately call a POISON CENTER or doctor/physician
IF ON SKIN: Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse. Collect spillage.

Precautionary Statements - Storage
Store locked up.

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Other information
May be harmful if swallowed.

Hazards not otherwise classified (HNOC) Not applicable

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Weight %</th>
<th>ENCS</th>
<th>ISHL No</th>
<th>CAS-No</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIETHANOL AMINE</td>
<td>10 - 30</td>
<td>X</td>
<td>(2)-354,(2)-302</td>
<td>111-42-2</td>
</tr>
</tbody>
</table>
Section 4: FIRST AID MEASURES

General advice
In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

Inhalation
Move to fresh air.

Skin contact
Wash off immediately with plenty of water for at least 15 minutes.

Eye contact
Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.

Ingestion
Never give anything by mouth to an unconscious person. If symptoms persist, call a physician. Not an expected route of exposure.

Notes to physician
Treat symptomatically.

Section 5: FIRE FIGHTING MEASURES

Flammable Properties
May cause fire.

Suitable Extinguishing Media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable Extinguishing Media
No information available.

Specific hazards arising from the chemical
Keep product and empty container away from heat and sources of ignition.

Special Extinguishing Media
Cool drums with water spray.

Section 6: ACCIDENTAL RELEASE MEASURES

Personal precautions
For personal protection see section 8.

Environmental precautions
Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

Methods for Containment
Prevent further leakage or spillage if safe to do so.

Methods for cleaning up
Soak up with inert absorbent material.

Prevention of secondary hazards
Clean contaminated objects and areas thoroughly observing environmental regulations.

Section 7: HANDLING AND STORAGE

Handling
Advice on safe handling
Avoid contact with skin, eyes and clothing. Handle in accordance with good industrial hygiene and safety practice.

Storage
Technical measures/Storage conditions
Keep container tightly closed in a dry and well-ventilated place.

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines
### Section 9: PHYSICAL AND CHEMICAL PROPERTIES

#### Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Values</th>
<th>Remarks • Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH VALUE</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Melting point / freezing point</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Boiling point/boiling range (°C)</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Flash point</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Flammability Limit in Air</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Upper flammability limit:</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Lower flammability limit:</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Vapor density</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Relative density</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Water Solubility</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>Solubility in other solvents</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Partition coefficient</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Autoignition temperature</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Viscosity, dynamic</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Explosive properties</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Oxidizing Properties</td>
<td>No information available</td>
<td></td>
</tr>
</tbody>
</table>

#### Other information

<table>
<thead>
<tr>
<th>Property</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOC Content (%)</td>
<td>No information available</td>
</tr>
<tr>
<td>Bulk Density</td>
<td>No information available</td>
</tr>
</tbody>
</table>
Section 10: STABILITY AND REACTIVITY

Reactivity
No dangerous reaction known under conditions of normal use.

Stability
Stable under normal conditions.

Explosion Data
Sensitivity to Mechanical Impact None.
Sensitivity to Static Discharge None.

Hazardous Reactions
None under normal processing.

Conditions to Avoid
None known based on information supplied.

Hazardous Decomposition Products
None under normal use conditions.

Section 11: TOXICOLOGICAL INFORMATION

Acute toxicity

Numerical measures of toxicity - Product Information

Unknown acute toxicity

20.328064 % of the mixture consists of ingredient(s) of unknown acute oral toxicity
38.824064 % of the mixture consists of ingredient(s) of unknown acute dermal toxicity
38.824064 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (gas)
38.824064 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapor)
38.824064 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (dust/mist)

The following values are calculated based on chapter 3.1 of the GHS document

| ATEmix (oral)         | 2,154.00 mg/kg |
| ATEmix (dermal)       | No information available mg/kg |
| ATEmix (inhalation-gas)| No information available |
| ATEmix (inhalation-dust/mist) | No information available |
| ATEmix (inhalation-vapor) | No information available |

Numerical measures of toxicity - Component Information

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>LD50 Oral</th>
<th>LD50 Dermal</th>
<th>LC50 Inhalation</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIETHANOL AMINE</td>
<td>620 µL/kg ( Rat ) 780 mg/kg ( Rat )</td>
<td>11.9 mL/kg ( Rabbit ) 7640 µL/kg ( Rabbit )</td>
<td>-</td>
</tr>
</tbody>
</table>

Delayed and immediate effects as well as chronic effects from short and long-term exposure

<table>
<thead>
<tr>
<th>Effect</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin corrosion/irritation</td>
<td>No information available.</td>
</tr>
<tr>
<td>Serious Eye Damage/Eye Irritation</td>
<td>No information available.</td>
</tr>
<tr>
<td>Sensitization</td>
<td>No information available.</td>
</tr>
<tr>
<td>Mutagenic effects</td>
<td>No information available.</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>The table below indicates whether each agency has listed any ingredient as a carcinogen.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Japan</th>
<th>IARC</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIETHANOL AMINE</td>
<td>2</td>
<td>Group 2B</td>
</tr>
</tbody>
</table>
IARC: (International Agency for Research on Cancer)
Group 2B - Possibly Carcinogenic to Humans

Reproductive toxicity
No information available.

STOT - Single Exposure
No information available.

STOT -Repeated Exposure
No information available.

Neurological effects
No information available.

Target Organ Effects
No information available.

Aspiration Hazard
No information available.

Section 12: ECOLOGICAL INFORMATION

Ecotoxicity
20.68806 % of the mixture consists of components(s) of unknown hazards to the aquatic environment.

Toxic to aquatic life with long lasting effects

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Algae/aquatic plants</th>
<th>Fish</th>
<th>Toxicity to daphnia and other aquatic invertebrates</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIETHANOL AMINE</td>
<td>2.1 - 2.3: 96 h Pseudokirchneriella subcapitata mg/L EC50 7.8: 72 h Desmodesmus subspicatus mg/L EC50</td>
<td>1200 - 1580: 96 h Pimephales promelas mg/L LC50 static 4480 - 4980: 96 h Pimephales promelas mg/L LC50 flow-through 600 - 1000: 96 h Lepomis macrochirrus mg/L LC50 static</td>
<td>55: 48 h Daphnia magna mg/L EC50</td>
</tr>
</tbody>
</table>

Persistence and degradability
No information available.

Bioaccumulation
No information available.

Mobility
No information available.

Section 13: DISPOSAL CONSIDERATIONS

Waste from Residues / Unused Products
Dispose of as hazardous waste in compliance with local and national regulations.

Contaminated packaging
Dispose of in accordance with local regulations.

Section 14: TRANSPORT INFORMATION

IMDG/IMO
UN/ID no
UN3082
Proper Shipping Name
Environmentally hazardous substance, liquid, n.o.s.
Hazard Class
9
Packing group
III
EmS-No
F-A, S-F
Description
UN3082, Environmentally hazardous substance, liquid, n.o.s. (SEAP SUBSTRATE, DIETHANOL AMINE), 9, III, Marine Pollutant
Section 15: REGULATORY INFORMATION

International Inventories  For research use only

TSCA  -
DSL/NDSL  -
EINECS/ELINCS  -
ENCS  -
IECSC  -
KECL  -
PICCS  -
AICS  -

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

Japan
Industrial Safety and Health Law:
<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Dangerous Substances</th>
<th>organic solvents</th>
<th>Harmful Substances Whose Names Are to be Indicated on the Label</th>
<th>ISHL - Prevention of Hazards Due to Specified Chemical Substances (Class 2)</th>
<th>Prevention of Lead Poisoning</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIETHANOL AMINE</td>
<td>&gt;=0.1 %</td>
<td>Not Applicable</td>
<td>X</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Pollutant Release and Transfer Register (Class II):</th>
<th>Pollutant Release and Transfer Register (Class I):</th>
<th>Poisonous and Deleterious Substances Control Law</th>
<th>Restrictions on use</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIETHANOL AMINE</td>
<td>Not Applicable</td>
<td>-</td>
<td>Not Applicable</td>
<td>Group 4</td>
</tr>
</tbody>
</table>

**Section 16: OTHER INFORMATION**

Issuing Date  
2020-04-08

Revision Date  
2020-04-08

Revision Note  
No information available.

Key or legend to abbreviations and acronyms used in the safety data sheet

- No information available

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End of Safety Data Sheet