<table>
<thead>
<tr>
<th>Product code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1441</td>
<td>Alkaline Protease Solution</td>
</tr>
</tbody>
</table>

Components:

<table>
<thead>
<tr>
<th>Product code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A144</td>
<td>Alkaline Protease Solution</td>
</tr>
</tbody>
</table>
1 Identification

Product identifier
Trade name: Alkaline Protease Solution

Article number: A144
Application of the substance / the mixture Laboratory chemicals

Details of the supplier of the safety data sheet
Manufacturer/Supplier:
Promega Corporation
2800 Woods Hollow Road
Madison, WI 53711
U.S.A.
1-800-356-9526 or (608)-274-4330

Information department: SDS author: Regulatory.Affairs@promega.com

Emergency telephone number:
For Chemical Emergency Spill, Leak, Fire, Exposure, or Accident Call CHEMTREC Day or Night Within USA and Canada: 1-800-424-9300
Outside USA and Canada: +1 703-527-3887 (collect calls accepted)

2 Hazard(s) identification

Classification of the substance or mixture

GHS08 Health hazard
Resp. Sens. 1 H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Repr. 1 H360 May damage fertility or the unborn child.

GHS05 Corrosion
Eye Dam. 1 H318 Causes serious eye damage.

GHS07
Skin Irrit. 2 H315 Causes skin irritation.
STOT SE 3 H335 May cause respiratory irritation.

Label elements
GHS label elements The product is classified and labeled according to the Globally Harmonized System (GHS).

Hazard pictograms GHS05, GHS07, GHS08
Signal word Danger

Hazard-determining components of labeling:
Subtilisin

(Contd. on page 2)
Trade name: Alkaline Protease Solution

disodium tetraborate, anhydrous

**Hazard statements**
Causes skin irritation.
Causes serious eye damage.
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May damage fertility or the unborn child.
May cause respiratory irritation.

**Precautionary statements**
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Avoid breathing dust/fume/gas/mist/vapors/spray
Wash thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/protective clothing/eye protection/face protection.
[In case of inadequate ventilation] wear respiratory protection.
IF ON SKIN: Wash with plenty of water.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Get medical advice/attention.
Immediately call a POISON CENTER/doctor.
If skin irritation occurs: Get medical advice/attention.
If experiencing respiratory symptoms: Call a POISON CENTER/doctor.
Take off contaminated clothing and wash it before reuse.
Store in a well-ventilated place. Keep container tightly closed.
Store locked up.
Dispose of contents/container in accordance with local/regional/national/international regulations.

**Classification system:**
*NFPA ratings (scale 0 - 4)*
Health = 1
Fire = 0
Reactivity = 0

*HMIS-ratings (scale 0 - 4)*
Health = 1
Fire = 0
Reactivity = 0

**OSHA Hazard Overview (Criteria according to 29CFR1910.1200):**
Irritant
Sensitizer

**Primary route(s) of entry:**
Dermal
Inhalation
Oral
**Target Organ(s):** Risk of damage to eyes

**Other hazards**
This mixture has not been tested to determine the overall health hazard; therefore in accordance with 29CFR1910.1200, the data reported above pertains to the hazardous ingredients of this mixture.

**Results of PBT and vPvB assessment**
PBT: Not applicable.
vPvB: Not applicable.
**3 Composition/information on ingredients**

**Chemical characterization: Mixtures**

**Description:**
The product is a mixture of the hazardous substances listed below along with unlisted nonhazardous substances. The exact concentration percentages of the hazardous substances may be withheld as a Promega Corp. trade secret.

**Dangerous components:**

<table>
<thead>
<tr>
<th>Chemical</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>57-55-6 propane-1,2-diol</td>
<td>20-25%</td>
</tr>
<tr>
<td>Subtilisin</td>
<td>20-25%</td>
</tr>
<tr>
<td>1330-43-4 disodium tetraborate, anhydrous</td>
<td>1-5%</td>
</tr>
</tbody>
</table>

**Additional information:** For the wording of the listed risk phrases refer to section 15.

**4 First-aid measures**

**Description of first aid measures**

**After inhalation:**
Supply fresh air and to be sure call for a doctor.
In case of unconsciousness place patient stably in side position for transportation.
Seek medical treatment in case of complaints.

**After skin contact:**
Immediately wash with water and soap and rinse thoroughly.
If skin irritation continues, consult a doctor.

**After eye contact:**
Rinse opened eye for several minutes under running water.

**After swallowing:**
If the patient feels unwell or is concerned, obtain medical advice.

**Information for doctor:**
Most important symptoms and effects, both acute and delayed: Allergic reactions
Indication of any immediate medical attention and special treatment needed: No further relevant information available.

**5 Fire-fighting measures**

**Extinguishing media**

**Suitable extinguishing agents:**
CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

**Special hazards arising from the substance or mixture:**
None known

**Advice for firefighters:**
No special advice.

**6 Accidental release measures**

**Personal precautions, protective equipment and emergency procedures**
Remove persons from danger area.
Wear protective clothing.

**Environmental precautions:**
Dilute with plenty of water.
Do not allow to enter sewers/ surface or ground water.

**Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Dispose contaminated material as waste according to Section 13.
Ensure adequate ventilation.
Trade name: Alkaline Protease Solution

Reference to other sections
See Section 7 for information on safe handling.
See Section 13 for disposal information.

Protective Action Criteria for Chemicals

PAC-1:

<table>
<thead>
<tr>
<th>Component</th>
<th>Limit Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>57-55-6 propane-1,2-diol</td>
<td>30 mg/m³</td>
</tr>
<tr>
<td>1330-43-4 disodium tetraborate, anhydrous</td>
<td>6 mg/m³</td>
</tr>
</tbody>
</table>

PAC-2:

<table>
<thead>
<tr>
<th>Component</th>
<th>Limit Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>57-55-6 propane-1,2-diol</td>
<td>1,300 mg/m³</td>
</tr>
<tr>
<td>1330-43-4 disodium tetraborate, anhydrous</td>
<td>88 mg/m³</td>
</tr>
</tbody>
</table>

PAC-3:

<table>
<thead>
<tr>
<th>Component</th>
<th>Limit Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>57-55-6 propane-1,2-diol</td>
<td>7,900 mg/m³</td>
</tr>
<tr>
<td>1330-43-4 disodium tetraborate, anhydrous</td>
<td>530 mg/m³</td>
</tr>
</tbody>
</table>

Handling and storage

Handling:
Precautions for safe handling
Keep receptacles tightly sealed.
Ensure good ventilation/exhaustion at the workplace.
Prevent formation of aerosols.
Work only in fume cabinet.

Information about protection against explosions and fires:
Keep respiratory protective device available.
The product is not flammable.

Conditions for safe storage, including any incompatibilities

Storage:
Requirements to be met by storerooms and receptacles: No special requirements.
Information about storage in one common storage facility: Not required.
Further information about storage conditions: Keep receptacle tightly sealed.
Specific end use(s) No further relevant information available.

Exposure controls/personal protection

Control parameters

Components with limit values that require monitoring at the workplace:

57-55-6 propane-1,2-diol

WEEL Long-term value: 10 mg/m³

Subtilisin

REL Short-term value: 0.00006* mg/m³
*60-min

TLV Ceiling limit value: 0.00006 mg/m³
as 100% crystalline active pure enzyme

(Contd. on page 5)
Trade name: Alkaline Protease Solution

### 1330-43-4 disodium tetraborate, anhydrous

<table>
<thead>
<tr>
<th>REL</th>
<th>Long-term value: 1 mg/m³ anhydrous</th>
</tr>
</thead>
<tbody>
<tr>
<td>TLV</td>
<td>Short-term value: 6* mg/m³</td>
</tr>
</tbody>
</table>

*as inhalable fraction

Additional information: The lists that were valid during the creation were used as basis.

**Exposure controls**

**Personal protective equipment:**

**General protective and hygienic measures:**

Keep away from foodstuffs, beverages and feed.

Immediately remove all soiled and contaminated clothing.

Wash hands before breaks and at the end of work.

Avoid contact with the skin.

Avoid contact with the eyes and skin.

Do not eat or drink while working.

Clean skin thoroughly immediately after handling the product.

**Breathing equipment:**

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

**Protection of hands:**

Protective gloves

Select the glove material considering penetration time, rate of diffusion and degradation time.

It is recommended that the selected protective gloves be tested and approved under NIOSH or EU Directive 89/686/EEC and the standard EN 374 derived from it.

**Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

**Eye protection:**

Tightly sealed goggles

Use equipment for eye protection tested and approved under government NIOSH standards.

---

### 9 Physical and chemical properties

**Information on basic physical and chemical properties**

**General Information**

**Appearance:**

<table>
<thead>
<tr>
<th>Form:</th>
<th>Fluid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color:</td>
<td>Colorless</td>
</tr>
<tr>
<td>Odor:</td>
<td>Not determined</td>
</tr>
<tr>
<td>Odor threshold:</td>
<td>Not determined.</td>
</tr>
</tbody>
</table>

**pH-value at 20°C (68 °F):**

6.3

**Change in condition**

<table>
<thead>
<tr>
<th>Melting point/Melting range:</th>
<th>Undetermined.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boiling point/Boiling range:</td>
<td>100°C (°F)</td>
</tr>
<tr>
<td>Flash point:</td>
<td>Not applicable.</td>
</tr>
</tbody>
</table>

**Flammability (solid, gaseous):**

Not applicable.

**Ignition temperature:**

371°C (°F)
### 10 Stability and reactivity

**Reactivity**
No further relevant information available.

**Chemical stability**

- **Thermal decomposition / conditions to be avoided:**
  No decomposition if used according to specifications.

- **Possibility of hazardous reactions:**
  No dangerous reactions known.

- **Conditions to avoid:**
  No further relevant information available.

- **Incompatible materials:**
  No further relevant information available.

- **Hazardous decomposition products:**
  No dangerous decomposition products known.

### 11 Toxicological information

**Information on toxicological effects**

**Acute toxicity:**

- **LD/LC50 values that are relevant for classification:**
  
<table>
<thead>
<tr>
<th>Subtilisin</th>
<th>Oral LD50 (mg/kg) (Rat)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1330-43-4 disodium tetraborate, anhydrous</td>
<td>Oral LD50 2,660 mg/kg (Rat)</td>
</tr>
</tbody>
</table>

- **Primary irritant effect:**
  - **on the skin:**
    Irritant to skin and mucous membranes.
  - **on the eye:**
    Strong irritant with the danger of severe eye injury.

  **Irritating effect:**

(Contd. on page 7)
Trade name: Alkaline Protease Solution

Sensitization: Sensitization possible through inhalation.
Additional toxicological information:
The product shows the following dangers according to internally approved calculation methods for preparations:
Harmful
Irritant

Carcinogenic categories

IARC (International Agency for Research on Cancer)
None of the ingredients are listed.

NTP (National Toxicology Program)
None of the ingredients are listed.

OSHA-Ca (Occupational Safety & Health Administration)
None of the ingredients are listed.

12 Ecological information

Toxicity
Aquatic toxicity: Not harmful to the aquatic environment
Persistence and degradability: Not available
Behavior in environmental systems:
Bioaccumulative potential: Not known
Mobility in soil: No further relevant information available.
Ecotoxicological effects:
Remark: Not available
Additional ecological information:

General notes:
Water hazard class 1 (Self-assessment): slightly hazardous for water
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.
Other adverse effects: No further relevant information available.

13 Disposal considerations

Waste treatment methods
Recommendation:
Disposal should be in accordance with applicable regional, national and local laws and regulations.
Refer to Section 7: Handling and Storage and Section 8: Exposure Control/Personal Protection for additional handling information and protection of employees.

Uncleaned packagings:
Recommendation: Disposal must be made according to official regulations.
Recommended cleansing agent: Water, if necessary with cleansing agents.

14 Transport information

UN-Number
Not hazardous for transportation
DOT, ADR, ADN, IMDG, IATA
Void

(Contd. on page 8)
### 15 Regulatory information

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

#### Sara

**Section 355 (extremely hazardous substances):**

None of the ingredients are listed.

**Section 313 (Specific toxic chemical listings):**

None of the ingredients are listed.

**TSCA (Toxic Substances Control Act):**

All ingredients are listed.

**Proposition 65**

**Chemicals known to cause cancer:**

None of the ingredients are listed.

**Chemicals known to cause reproductive toxicity for females:**

None of the ingredients are listed.

**Chemicals known to cause reproductive toxicity for males:**

None of the ingredients are listed.

**Chemicals known to cause developmental toxicity:**

None of the ingredients are listed.

**Cancerogenity categories**

<table>
<thead>
<tr>
<th>EPA (Environmental Protection Agency)</th>
<th>TLV (Threshold Limit Value established by ACGIH)</th>
<th>NIOSH-Ca (National Institute for Occupational Safety and Health)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1330-43-4 disodium tetraborate, anhydrous</td>
<td>1330-43-4 disodium tetraborate, anhydrous</td>
<td>None of the ingredients are listed.</td>
</tr>
<tr>
<td>I (oral)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A4</td>
<td></td>
</tr>
</tbody>
</table>

**GHS label elements**

The product is classified and labeled according to the Globally Harmonized System (GHS).

**Signal word**

Danger
Hazard-determining components of labeling:
Subtilisin
disodium tetraborate, anhydrous

Hazard statements
Causes skin irritation.
Causes serious eye damage.
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May damage fertility or the unborn child.
May cause respiratory irritation.

Precautionary statements
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Avoid breathing dust/fume/gas/mist/vapors/spray
Wash thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/protective clothing/eye protection/face protection.
In case of inadequate ventilation wear respiratory protection.

IF ON SKIN: Wash with plenty of water.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
Continue rinsing.
IF exposed or concerned: Get medical advice/attention.
Immediately call a POISON CENTER/doctor.

If skin irritation occurs: Get medical advice/attention.
If experiencing respiratory symptoms: Call a POISON CENTER/doctor.
Take off contaminated clothing and wash it before reuse.
Store in a well-ventilated place. Keep container tightly closed.
Store locked up.
Dispose of contents/container in accordance with local/regional/national/international regulations.

National regulations:
Water hazard class: Water hazard class 1 (Self-assessment): slightly hazardous for water.
Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information
This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Department issuing SDS:
Promega Corporation
Environmental Health and Safety Department
2800 Woods Hollow Road
Madison, WI
Ph: (608)274-4330
Date of preparation / last revision 08/03/2017 / -

Abbreviations and acronyms:
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
| NFPA: National Fire Protection Association (USA) | (Contd. of page 9) |
| HMIS: Hazardous Materials Identification System (USA) | |
| VOC: Volatile Organic Compounds (USA, EU) | |
| LC50: Lethal concentration, 50 percent | |
| LD50: Lethal dose, 50 percent | |
| PBT: Persistent, Bioaccumulative and Toxic | |
| vPvB: very Persistent and very Bioaccumulative | |
| NIOSH: National Institute for Occupational Safety | |
| OSHA: Occupational Safety & Health | |
| TLV: Threshold Limit Value | |
| PEL: Permissible Exposure Limit | |
| REL: Recommended Exposure Limit | |
| Skin Irrit. 2: Skin corrosion/irritation – Category 2 | |
| Eye Dam. 1: Serious eye damage/eye irritation – Category 1 | |
| Resp. Sens. 1: Respiratory sensitisation – Category 1 | |
| Rep. 1: Reproductive toxicity – Category 1 | |
| STOT SE 3: Specific target organ toxicity (single exposure) – Category 3 | |
| * Data compared to the previous version altered. | |