Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date 03/29/2006
Reviewed on 02/01/2006

1 Identification of substance

Trade name: Neutralization Solution (NSA), 150ml

Article number: A148
Application of the substance / the preparation Laboratory chemicals

Manufacturer/Supplier:
Promega Corporation
2800 Woods Hollow Road
Madison, WI 53711,
U.S.A.
1-800-356-9526 or (608)-274-4330
Emergency information:
CHEMTREC 1-800-424-9300
for call originating outside the United States dial 001-703-527-3887

2 Composition/Data on components

Chemical characterization
Description: Mixture of the substances listed below with nonhazardous additions.

Dangerous components:
<table>
<thead>
<tr>
<th>Substance</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-01-1 guanidinium chloride</td>
<td>25-50%</td>
</tr>
<tr>
<td>64-19-7 acetic acid, conc. of &gt;10 percent, by weight, of acetic acid</td>
<td>10-15%</td>
</tr>
</tbody>
</table>

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

3 Hazards identification

Hazard description:

Xn Harmful

Information pertaining to particular dangers for man and environment:
Harmful if swallowed.
Irritating to eyes and skin.

Classification system:
The classification was made according to the latest editions of international substances lists, and is expanded upon by company and technical literature data.

NFPA ratings (scale 0 - 4)
Health = 2
Fire = 0
Reactivity = 0

(Contd. on page 2)
Trade name: Neutralization Solution (NSA), 150ml

HMIS-ratings (scale 0 - 4)
- Health = 2
- Fire = 0
- Reactivity = 0

OSHA Hazard Overview (Criteria according to 29CFR1910.1200):
- Toxic
- Irritant

Primary route(s) of entry:
- Dermal
- Oral

Target Organ(s):
- May affect Nervous system (Neurotoxin)
- May cause Kidney damage (Nephrotoxin)
- Risk of damage to eyes
- Affects Teeth
- May affect Bones

Additional information:
- Product contains a toxic substance in greater than 1% and may exhibit toxicological properties similar to the pure substance.

4 First aid measures

General information:
- Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

After inhalation: In case of unconsciousness place patient stably in side position for transportation.
After skin contact: Immediately wash with water and soap and rinse thoroughly.
After eye contact:
- Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
After swallowing: Immediately call a doctor.

5 Fire fighting measures

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

6 Accidental release measures

Person-related safety precautions: Not required.

Measures for environmental protection:
- Dilute with plenty of water.
- Do not allow to enter sewers/surface or ground water.

Measures for cleaning/collection:
- Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
- Dispose contaminated material as waste according to item 13.
- Ensure adequate ventilation.
7 Handling and storage

Handling:
Information for safe handling:
Keep receptacles tightly sealed.
Ensure good ventilation/exhaustion at the workplace.
Prevent formation of aerosols.
No special precautions are necessary if used correctly.
Information about protection against explosions and fires: No special measures required.

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.

8 Exposure controls and personal protection

Components with limit values that require monitoring at the workplace:
64-19-7 acetic acid, conc. of >10 percent, by weight, of acetic acid

<table>
<thead>
<tr>
<th></th>
<th>PEL 25 mg/m³, 10 ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>REL</td>
<td>Short-term value: 37 mg/m³, 15 ppm</td>
</tr>
<tr>
<td></td>
<td>Long-term value: 25 mg/m³, 10 ppm</td>
</tr>
<tr>
<td>TLV</td>
<td>Short-term value: 37 mg/m³, 15 ppm</td>
</tr>
<tr>
<td></td>
<td>Long-term value: 25 mg/m³, 10 ppm</td>
</tr>
</tbody>
</table>

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

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.
Do not inhale gases / fumes / aerosols.
Avoid contact with the eyes and skin.

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
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

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

9 Physical and chemical properties

General Information

<table>
<thead>
<tr>
<th></th>
<th>Fluid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color:</td>
<td>Colorless</td>
</tr>
<tr>
<td>Odor:</td>
<td>Characteristic</td>
</tr>
</tbody>
</table>
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Printing date 03/29/2006
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Trade name: Neutralization Solution (NSA), 150ml

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in condition</td>
<td>Undetermined.</td>
</tr>
<tr>
<td>Melting point/Melting range</td>
<td>100°C (212°F)</td>
</tr>
<tr>
<td>Boiling point/Boiling range</td>
<td></td>
</tr>
<tr>
<td>Flash point</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Ignition temperature</td>
<td>485.0°C (905°F)</td>
</tr>
<tr>
<td>Auto igniting</td>
<td>Product is not selfigniting.</td>
</tr>
<tr>
<td>Danger of explosion</td>
<td>Product does not present an explosion hazard.</td>
</tr>
<tr>
<td>Explosion limits</td>
<td></td>
</tr>
<tr>
<td>Lower</td>
<td>4.0 Vol %</td>
</tr>
<tr>
<td>Upper</td>
<td>17.0 Vol %</td>
</tr>
<tr>
<td>Vapor pressure at 20°C (68°F)</td>
<td>16.0 hPa (12 mm Hg)</td>
</tr>
<tr>
<td>Density at 20°C (68°F)</td>
<td>0.87 g/cm³</td>
</tr>
<tr>
<td>Solubility in / Miscibility with Water</td>
<td>Fully miscible.</td>
</tr>
<tr>
<td>Solvent content</td>
<td></td>
</tr>
<tr>
<td>Organic solvents</td>
<td>12.7 %</td>
</tr>
<tr>
<td>Water</td>
<td>40.8 %</td>
</tr>
<tr>
<td>VOC content</td>
<td>12.7 %</td>
</tr>
<tr>
<td>Solids content</td>
<td>46.5 %</td>
</tr>
</tbody>
</table>

10 Stability and reactivity

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

Dangerous reactions
Reacts with strong oxidizing agents.
Reacts with strong acids and oxidizing agents.

Dangerous products of decomposition:
Carbon monoxide and carbon dioxide
Hydrogen chloride (HCl)

11 Toxicological information

Acute toxicity:

LD/LC50 values that are relevant for classification:

50-01-1 guanidinium chloride

<table>
<thead>
<tr>
<th>Route of exposure</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>LD50 475 mg/kg (Rat)</td>
</tr>
<tr>
<td>Irritation of eyes</td>
<td>acute 500 mg (Rabbit)</td>
</tr>
<tr>
<td></td>
<td>Severe Irritation</td>
</tr>
</tbody>
</table>

Primary irritant effect:

on the skin: Irritant to skin and mucous membranes.
on the eye: Irritating effect.
Sensitization: No sensitizing effects known.
Additional toxicological information:
The product shows the following dangers according to internally approved calculation methods for preparations:
Harmful

(Contd. on page 5)
Material Safety Data Sheet
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Irritant

12 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.

13 Disposal considerations

Product:
Recommendation:
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

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

14 Transport information

Contact Promega Safety Department for additional transportation information

DOT regulations:

Hazard class: 8
Identification number: UN2586
Packing group: III
Proper shipping name (technical name): ALKYLSPHONIC ACIDS, LIQUID
Label 8

Land transport ADR/RID (cross-border):

ADR/RID class: 8 (C3) Corrosive substances
Danger code (Kemler): 80
UN-Number: 2586
Packaging group: III
Label: 8
Description of goods: 2586 ALKYLSULPHONIC ACIDS, LIQUID
Material Safety Data Sheet
acc. to ISO/DIS 11014

Trade name: Neutralization Solution (NSA), 150ml

(Contd. of page 5)

Maritime transport IMDG:

| IMDG Class: | 8 |
| UN Number:   | 2586 |
| Label        | 8 |
| Packaging group: | III |
| EMS Number:  | F-A,S-B |
| Marine pollutant: | No |
| Proper shipping name: | ALKYL SULPHONIC ACIDS, LIQUID |

Air transport ICAO-TI and IATA-DGR:

| ICAO/IATA Class: | 8 |
| UN/ID Number:    | 2586 |
| Label            | 8 |
| Packaging group: | III |
| Proper shipping name: | ALKYL SULPHONIC ACIDS, LIQUID |

15 Regulations

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:
None of the ingredients are listed.

Cancerogenity categories

EPA (Environmental Protection Agency)
None of the ingredients are listed.

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

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

TLV (Threshold Limit Value established by ACGIH)
None of the ingredients are listed.

MAK (German Maximum Workplace Concentration)
None of the ingredients are listed.

(Contd. on page 7)
Material Safety Data Sheet  
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<table>
<thead>
<tr>
<th>NIOSH-Ca (National Institute for Occupational Safety and Health)</th>
</tr>
</thead>
<tbody>
<tr>
<td>None of the ingredients are listed.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OSHA-Ca (Occupational Safety &amp; Health Administration)</th>
</tr>
</thead>
<tbody>
<tr>
<td>None of the ingredients are listed.</td>
</tr>
</tbody>
</table>

Product related hazard informations:  
The product has been classified and marked in accordance with directives on hazardous materials.

Hazard symbols:  
Xn Harmful

Hazard-determining components of labelling:  
guanidinium chloride

Risk phrases:  
Harmful if swallowed.  
Irritating to eyes and skin.

Safety phrases:  
Do not breathe fumes/aerosol.  
In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
This material and its container must be disposed of in a safe way.  
Wear suitable protective clothing and gloves.  
If swallowed, seek medical advice immediately and show this container or label.

National regulations:  
Water hazard class: Water hazard class 1 (Self-assessment): slightly hazardous for water.

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 MSDS:  
Promega Corporation  
Environmental Health and Safety Department  
2800 Woods Hollow Road  
Madison, WI  
Ph:(608)274-4330

USA