1. PRODUCT AND COMPANY IDENTIFICATION

Product Name          Buffer Solution, pH 9.00
Cat No.               SB114-1; SB114-20; SB114-500
Synonyms              (Certified)
Recommended Use       Laboratory chemicals

2. HAZARDS IDENTIFICATION

CAUTION! May cause eye, skin, and respiratory tract irritation. The toxicological properties have not been fully investigated.

Emergency Overview

Appearance No information available           Physical State Liquid          odor odorless

Target Organs None known.

Potential Health Effects

Acute Effects

Principle Routes of Exposure

<table>
<thead>
<tr>
<th>Route</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eyes</td>
<td>May cause irritation</td>
</tr>
<tr>
<td>Skin</td>
<td>May cause irritation</td>
</tr>
<tr>
<td>Inhalation</td>
<td>May cause irritation of respiratory tract</td>
</tr>
<tr>
<td>Ingestion</td>
<td>Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea</td>
</tr>
</tbody>
</table>

Chronic Effects None known.

See Section 11 for additional Toxicological information.

Aggravated Medical Conditions No information available.
3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Haz/Non-haz</th>
<th>Component</th>
<th>CAS-No</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Water</td>
<td>7732-18-5</td>
<td>99.17</td>
</tr>
<tr>
<td></td>
<td>Potassium chloride</td>
<td>7447-40-7</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>Boric acid (H3BO3)</td>
<td>10043-35-3</td>
<td>0.3</td>
</tr>
<tr>
<td></td>
<td>Sodium hydroxide</td>
<td>1310-73-2</td>
<td>0.1</td>
</tr>
<tr>
<td></td>
<td>Tetrasodium EDTA</td>
<td>64-02-8</td>
<td>0.03</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

Eye Contact
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Obtain medical attention.

Skin Contact
Wash off immediately with plenty of water for at least 15 minutes. Get medical attention immediately if symptoms occur.

Inhalation
Move to fresh air. If breathing is difficult, give oxygen. Get medical attention immediately if symptoms occur.

Ingestion
Do not induce vomiting. Obtain medical attention.

Notes to Physician
Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Flash Point
Not applicable

Method
No information available.

Autoignition Temperature
No information available.

Explosion Limits
Upper
No data available

Lower
No data available

Suitable Extinguishing Media
Substance is nonflammable; use agent most appropriate to extinguish surrounding fire.

Unsuitable Extinguishing Media
No information available.

Hazardous Combustion Products
No information available.

Sensitivity to mechanical impact
No information available.

Sensitivity to static discharge
No information available.

Specific Hazards Arising from the Chemical
Thermal decomposition can lead to release of irritating gases and vapors.

Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA
Health 1       Flammability 0       Instability 0       Physical hazards N/A
6. ACCIDENTAL RELEASE MEASURES

Personal Precautions
Use personal protective equipment. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing.

Environmental Precautions
Should not be released into the environment.

Methods for Containment and Clean Up
Soak up with inert absorbent material. Keep in suitable and closed containers for disposal.

7. HANDLING AND STORAGE

Handling
Wear personal protective equipment. Ensure adequate ventilation. Do not breathe vapors or spray mist. Avoid contact with skin, eyes and clothing.

Storage
Keep containers tightly closed in a dry, cool and well-ventilated place.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Measures
Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Exposure Guidelines

<table>
<thead>
<tr>
<th>Component</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>NIOSH IDLH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boric acid (H3BO3)</td>
<td>TWA: 2 mg/m³</td>
<td>(Vacated) Ceiling: 2 mg/m³/ TWA: 2 mg/m³</td>
<td>IDLH: 10 mg/m³</td>
</tr>
<tr>
<td>Sodium hydroxide</td>
<td>Ceiling: 2 mg/m³</td>
<td>TWA: 2 mg/m³</td>
<td>Ceiling: 2 mg/m³</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component</th>
<th>Quebec</th>
<th>Mexico OEL (TWA)</th>
<th>Ontario TWAEV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boric acid (H3BO3)</td>
<td>Ceiling: 2 mg/m³</td>
<td>TWA: 2 mg/m³/</td>
<td>TWA: 2 mg/m³</td>
</tr>
<tr>
<td>Sodium hydroxide</td>
<td>Peak: 2 mg/m³</td>
<td>STEL: 6 mg/m³</td>
<td>CEV: 2 mg/m³</td>
</tr>
</tbody>
</table>

NIOSH IDLH: Immediately Dangerous to Life or Health

Personal Protective Equipment

Eye/face Protection
Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA’s eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166

Skin and body protection
Wear appropriate protective gloves and clothing to prevent skin exposure

Respiratory Protection
Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced

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>Appearance</td>
<td>No information available</td>
</tr>
<tr>
<td>odor</td>
<td>odorless</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>No information available.</td>
</tr>
<tr>
<td>pH</td>
<td>9.00</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>No information available.</td>
</tr>
</tbody>
</table>
9. PHYSICAL AND CHEMICAL PROPERTIES

Vapor Density 0.7
Viscosity No information available.
Boiling Point/Range 100°C / 212°F
Melting Point/Range 0°C / 32°F
Decomposition temperature °C No information available.
Flash Point Not applicable
Evaporation Rate No information available.
Specific Gravity No information available.
Solubility Soluble in water
Log Pow No data available

10. STABILITY AND REACTIVITY

Stability Stable under normal conditions.
Conditions to Avoid Excess heat.
Incompatible Materials None known
Hazardous Decomposition Products Thermal decomposition can lead to release of irritating gases and vapors
Hazardous Polymerization Hazardous polymerization does not occur
Hazardous Reactions None under normal processing.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity
Product Information No acute toxicity information is available for this product

Component Information

<table>
<thead>
<tr>
<th>Component</th>
<th>LD50 Oral</th>
<th>LD50 Dermal</th>
<th>LC50 Inhalation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>90 mL/kg (Rat)</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
<tr>
<td>Potassium chloride</td>
<td>2600 mg/kg (Rat)</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
<tr>
<td>Boric acid (H3BO3)</td>
<td>2660 mg/kg (Rat)</td>
<td>2000 mg/kg (Rabbit)</td>
<td>0.16 mg/L (Rat) 4 h</td>
</tr>
<tr>
<td>Sodium hydroxide</td>
<td>Not listed</td>
<td>1350 mg/kg (Rabbit)</td>
<td>Not listed</td>
</tr>
<tr>
<td>Tetrasodium EDTA</td>
<td>10 g/kg (Rat)</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
</tbody>
</table>

Irritation No information available.
Toxicologically Synergistic Products No information available.

Chronic Toxicity
Carcinogenicity There are no known carcinogenic chemicals in this product
Sensitization  No information available.

Mutagenic Effects  No information available.

Reproductive Effects  No information available.

Developmental Effects  No information available.

Teratogenicity  No information available.

Other Adverse Effects  The toxicological properties have not been fully investigated. See actual entry in RTECS for complete information.

Endocrine Disruptor Information  No information available

12. ECOLOGICAL INFORMATION

Ecotoxicity

<table>
<thead>
<tr>
<th>Component</th>
<th>Freshwater Algae</th>
<th>Freshwater Fish</th>
<th>Microtox</th>
<th>Water Flea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium chloride</td>
<td>EC50: 2500 mg/L/72h</td>
<td>Not listed</td>
<td>Not listed</td>
<td>EC50: 825 mg/L/48h</td>
</tr>
<tr>
<td>Boric acid (H3BO3)</td>
<td>Not listed</td>
<td>Gambusia affinis: LC50: 5600 mg/L/96h</td>
<td>Not listed</td>
<td>EC50 48 h 115.0 mg/L</td>
</tr>
<tr>
<td></td>
<td>EC50 72 h 1.01 mg/L</td>
<td>Not listed</td>
<td>Not listed</td>
<td>EC50 24 h 610 mg/L</td>
</tr>
</tbody>
</table>

Persistence and Degradability  No information available

Bioaccumulation/ Accumulation  No information available

Mobility

<table>
<thead>
<tr>
<th>Component</th>
<th>log Pow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boric acid (H3BO3)</td>
<td>-0.757</td>
</tr>
</tbody>
</table>

13. DISPOSAL CONSIDERATIONS

Waste Disposal Methods  Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification

14. TRANSPORT INFORMATION

DOT  Not regulated

TDG  Not regulated
14. TRANSPORT INFORMATION

IATA
Not regulated

IMDG/IMO
Not regulated

15. REGULATORY INFORMATION

International Inventories

<table>
<thead>
<tr>
<th>Component</th>
<th>TSCA</th>
<th>DSL</th>
<th>NDSL</th>
<th>EINECS</th>
<th>ELINCS</th>
<th>NLP</th>
<th>PICCS</th>
<th>ENCS</th>
<th>AICS</th>
<th>CHINA</th>
<th>KECL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>X</td>
<td>X</td>
<td></td>
<td>231-791-2</td>
<td>-</td>
<td>X</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>KE-35400</td>
<td>X</td>
</tr>
<tr>
<td>Potassium chloride</td>
<td>X</td>
<td>X</td>
<td></td>
<td>231-211-8</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>KE-29086</td>
<td>X</td>
</tr>
<tr>
<td>Boric acid (H3BO3)</td>
<td>X</td>
<td>X</td>
<td></td>
<td>233-139-2</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>KE-03499</td>
<td>X</td>
</tr>
<tr>
<td>Sodium hydroxide</td>
<td>X</td>
<td>X</td>
<td></td>
<td>215-185-5</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>KE-31487</td>
<td>X</td>
</tr>
<tr>
<td>Tetrasodium EDTA</td>
<td>X</td>
<td>X</td>
<td></td>
<td>200-573-9</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>KE-13654</td>
<td>X</td>
</tr>
</tbody>
</table>

Legend:
- X - Listed
- E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
- F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
- N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
- P - Indicates a commenced PMN substance
- R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
- S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
- T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
- XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).
- Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
- Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) Not applicable

SARA 313
Not applicable

SARA 311/312 Hazardous Categorization
Acute Health Hazard No
Chronic Health Hazard  No
Fire Hazard  No
Sudden Release of Pressure Hazard  No
Reactive Hazard  No

Clean Water Act

<table>
<thead>
<tr>
<th>Component</th>
<th>CWA - Hazardous Substances</th>
<th>CWA - Reportable Quantities</th>
<th>CWA - Toxic Pollutants</th>
<th>CWA - Priority Pollutants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium hydroxide</td>
<td>X</td>
<td>1000 lb</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Clean Air Act
Not applicable

OSHA
Not applicable

CERCLA
This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

<table>
<thead>
<tr>
<th>Component</th>
<th>Hazardous Substances RQs</th>
<th>CERCLA EHS RQs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium hydroxide</td>
<td>1000 lb</td>
<td>-</td>
</tr>
</tbody>
</table>

California Proposition 65
This product does not contain any Proposition 65 chemicals.

State Right-to-Know

<table>
<thead>
<tr>
<th>Component</th>
<th>Massachusetts</th>
<th>New Jersey</th>
<th>Pennsylvania</th>
<th>Illinois</th>
<th>Rhode Island</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium hydroxide</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>X</td>
</tr>
</tbody>
</table>

U.S. Department of Transportation
Reportable Quantity (RQ):  Y
DOT Marine Pollutant  N
DOT Severe Marine Pollutant  N

U.S. Department of Homeland Security
This product does not contain any DHS chemicals.

Other International Regulations

<table>
<thead>
<tr>
<th>Mexico - Grade</th>
<th>Belgium</th>
<th>Canada</th>
<th>China</th>
<th>France</th>
<th>Germany</th>
<th>Italy</th>
<th>Japan</th>
<th>Mexico</th>
<th>Netherlands</th>
<th>Spain</th>
<th>Switzerland</th>
<th>United Kingdom</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>No information available</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Canada
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

WHMIS Hazard Class
Non-controlled
16. OTHER INFORMATION

Prepared By
Regulatory Affairs
Thermo Fisher Scientific
Tel: (412) 490-8929

Creation Date
04-Feb-2010

Print Date
04-Feb-2010

Revision Summary
"***", and red text indicates revision

Disclaimer
The information provided on this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of MSDS