1 Identification

- **Product identifier**
  - **Trade name:** Versenate Hardness Buffer Solution
  - **Article number:** 205-04-15

- **Details of the supplier of the safety data sheet**
  - **Manufacturer/Supplier:** OFI Testing Equipment Inc.
    11302 Steeplecrest Dr.
    Houston, TX 77065
    (877) 837-8683
  - **Information department:** techservices@ofite.com
  - **Emergency telephone number:**
    INFOTRAC USA - CANADA: 1-800-535-5053
    INTERNATIONAL: 1-352-323-3500

2 Hazard(s) identification

- **Classification of the substance or mixture**
  - GHS05 Corrosion
  - Skin Corr. 1B  H314  Causes severe skin burns and eye damage.
  - Eye Dam. 1  H318  Causes serious eye damage.

- **Label elements**
  - **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
  - **Hazard pictograms**
    - GHS05

- **Signal word** Danger

- **Hazard-determining components of labeling:**
  - Ammonium Hydroxide

- **Hazard statements**
  - Causes severe skin burns and eye damage.

- **Precautionary statements**
  - Do not breathe dusts or mists.
  - Wear protective gloves/protective clothing/eye protection/face protection.
  - Wash thoroughly after handling.
  - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
  - Wash contaminated clothing before reuse.
  - 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/doctor.

Specific treatment (see on this label).
- IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- IF swallowed: Rinse mouth. Do NOT induce vomiting.
- Store locked up.
- Dispose of contents/container in accordance with local/regional/national/international regulations.

(Contd. on page 2)
Trade name: Versenate Hardness
Buffer Solution

- Classification system:
- NFPA ratings (scale 0 - 4)
  
  Health = 3
  Fire = 0
  Reactivity = 0

- HMIS-ratings (scale 0 - 4)
  
  HEALTH
  - Health = 3
  - Fire = 0
  - Reactivity = 0

- Other hazards
  
  - Results of PBT and vPvB assessment
  - PBT: Not applicable.
  - vPvB: Not applicable.

3 Composition/information on ingredients

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

- Dangerous components:

<table>
<thead>
<tr>
<th>CAS</th>
<th>Description</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1336-21-6</td>
<td>Ammonium Hydroxide</td>
<td>57.2%</td>
</tr>
<tr>
<td>7732-18-5</td>
<td>Water</td>
<td>36.0%</td>
</tr>
<tr>
<td>12125-02-9</td>
<td>Ammonium Chloride, Reagent ACS Grade</td>
<td>6.8%</td>
</tr>
</tbody>
</table>

- Table of Nonhazardous Ingredients

<table>
<thead>
<tr>
<th>CAS</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7732-18-5</td>
<td>Water</td>
</tr>
</tbody>
</table>

4 First-aid measures

- Description of first aid measures
  
  - General information: Immediately remove any clothing soiled by the product.
  - 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. Then consult a doctor.
  - After swallowing: Drink copious amounts of water and provide fresh air. Immediately call a doctor.
  - Information for doctor:
    - Most important symptoms and effects, both acute and delayed: No further relevant information available.
    - 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: No further relevant information available.
6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
  Wear protective equipment. Keep unprotected persons away.
- **Environmental precautions:** 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).
  Use neutralizing agent.
  Dispose contaminated material as waste according to item 13.
  Ensure adequate ventilation.
- **Reference to other sections**
  See Section 7 for information on safe handling.
  See Section 8 for information on personal protection equipment.
  See Section 13 for disposal information.
- **Protective Action Criteria for Chemicals**

<table>
<thead>
<tr>
<th>PAC-1:</th>
<th>CAS: 1336-21-6</th>
<th>Ammonium Hydroxide</th>
<th>61 ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CAS: 12125-02-9</td>
<td>Ammonium Chloride, Reagent ACS Grade</td>
<td>20 mg/m³</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PAC-2:</th>
<th>CAS: 1336-21-6</th>
<th>Ammonium Hydroxide</th>
<th>330 ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CAS: 12125-02-9</td>
<td>Ammonium Chloride, Reagent ACS Grade</td>
<td>54 mg/m³</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PAC-3:</th>
<th>CAS: 1336-21-6</th>
<th>Ammonium Hydroxide</th>
<th>2,300 ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CAS: 12125-02-9</td>
<td>Ammonium Chloride, Reagent ACS Grade</td>
<td>330 mg/m³</td>
</tr>
</tbody>
</table>

7 Handling and storage

- **Handling:**
  - **Precautions for safe handling** No special precautions are necessary if used correctly.
  - **Information about protection against explosions and fires:** No special measures required.
- **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.

8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **Control parameters**
- **Components with limit values that require monitoring at the workplace:**
  The following constituent is the only constituent of the product which has a PEL, TLV or other recommended exposure limit.
At this time, the remaining constituent has no known exposure limits.

<table>
<thead>
<tr>
<th>CAS: 12125-02-9 Ammonium Chloride, Reagent ACS Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>REL</td>
</tr>
<tr>
<td>TLV</td>
</tr>
</tbody>
</table>

- **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 eyes.
    - Avoid contact with the eyes and skin.
  - **Breathing equipment:** Not required.
  - **Protection of hands:**

  ![Protective gloves]

  The glove material has to be impermeable and resistant to the product/ the substance/ the preparation. Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture. 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.

- **Penetration time of glove material**
  - The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

- **Eye protection:**

  ![Tightly sealed goggles]

  - **Body protection:** Protective work clothing

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**9 Physical and chemical properties**

- **Information on basic physical and chemical properties**
- **General Information**
- **Appearance:**
  - **Form:** Liquid
  - **Color:** Colorless
  - **Odor:** Ammonia-like
  - **Odor threshold:** Not determined.

(Contd. on page 5)
# Safety Data Sheet

**Trade name:** Versenate Hardness

**Buffer Solution**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>pH-value:</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Change in condition</strong></td>
<td></td>
</tr>
<tr>
<td>- Melting point/Melting range:</td>
<td>Undetermined.</td>
</tr>
<tr>
<td>- Boiling point/Boiling range:</td>
<td>100 °C (212 °F)</td>
</tr>
<tr>
<td><strong>Flash point:</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Flammability (solid, gaseous):</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Decomposition temperature:</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Auto igniting:</strong></td>
<td>Product is not selfigniting.</td>
</tr>
<tr>
<td><strong>Danger of explosion:</strong></td>
<td>Product does not present an explosion hazard.</td>
</tr>
<tr>
<td><strong>Explosion limits:</strong></td>
<td></td>
</tr>
<tr>
<td>- Lower:</td>
<td>Not determined.</td>
</tr>
<tr>
<td>- Upper:</td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Vapor pressure at 20 °C (68 °F):</strong></td>
<td>23 hPa (17 mm Hg)</td>
</tr>
<tr>
<td><strong>Density at 20 °C (68 °F):</strong></td>
<td>0.97108 g/cm³ (8.104 lbs/gal)</td>
</tr>
<tr>
<td><strong>Relative density:</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Vapor density</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Evaporation rate</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Solubility in / Miscibility with Water:</strong></td>
<td>Not miscible or difficult to mix.</td>
</tr>
<tr>
<td><strong>Partition coefficient (n-octanol/water):</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Viscosity:</strong></td>
<td></td>
</tr>
<tr>
<td>- Dynamic:</td>
<td>Not determined.</td>
</tr>
<tr>
<td>- Kinematic:</td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Solvent content:</strong></td>
<td></td>
</tr>
<tr>
<td>- Organic solvents:</td>
<td>0.0 %</td>
</tr>
<tr>
<td>- Water:</td>
<td>36.0 %</td>
</tr>
<tr>
<td>- VOC content:</td>
<td>0.0 g/l / 0.00 lb/gl</td>
</tr>
<tr>
<td><strong>Other information</strong></td>
<td>No further relevant information available.</td>
</tr>
</tbody>
</table>

## 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:
    - ATE (Acute Toxicity Estimates)
      - Oral LD50 24265 mg/kg (rat)
  - Primary irritant effect:
    - on the skin: Caustic effect on skin and mucous membranes.
    - on the eye:
      - Strong caustic effect.
      - Strong irritant with the danger of severe eye injury.
    - Sensitization: No sensitizing effects known.
  - Additional toxicological information:
    - The product shows the following dangers according to internally approved calculation methods for preparations:
      - Corrosive
      - Irritant
      - Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

- Carcinogenic categories
  - IARC (International Agency for Research on Cancer)
    - None of the ingredients is listed.
  - NTP (National Toxicology Program)
    - None of the ingredients is listed.
  - OSHA-Ca (Occupational Safety & Health Administration)
    - None of the ingredients is listed.

12 Ecological information

- Toxicity
  - Aquatic toxicity: No further relevant information available.
  - Persistence and degradability: No further relevant information available.
  - Behavior in environmental systems:
    - Bioaccumulative potential: No further relevant information available.
  - Mobility in soil: No further relevant information available.
- Additional ecological information:
  - General notes:
    - Water hazard class 2 (Self-assessment): hazardous for water
    - Do not allow product to reach ground water, water course or sewage system.
    - Must not reach bodies of water or drainage ditch undiluted or unneutralized.
    - Danger to drinking water if even small quantities leak into the ground.
  - 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: 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.

14 Transport information

- UN-Number
- DOT, IMDG, IATA UN2672

- UN proper shipping name
- DOT Ammonia Solution
- IMDG AMMONIA SOLUTION, MARINE POLLUTANT
- IATA AMMONIA SOLUTION

- Transport hazard class(es)
  - DOT
    - Class 8 Corrosive substances
    - Label 8
  - IMDG
    - Class 8 Corrosive substances
    - Label 8
  - IATA
    - Class 8 Corrosive substances
    - Label 8

- Packing group
- DOT, IMDG, IATA III

- Environmental hazards: Product contains environmentally hazardous substances:
  - Ammonium Hydroxide
- Marine pollutant:
  - Yes
  - Symbol (fish and tree)

- Special precautions for user Warning: Corrosive substances

(Contd. on page 8)
Trade name: Versenate Hardness
Buffer Solution

- Danger code (Kemler): 80
- EMS Number: F-A,S-B
- Segregation groups: Alkalis
- Stowage Category: A
- Stowage Code:
  - SW2 Clear of living quarters.
  - SW3 Shall be transported under temperature control.
- Segregation Code:
  - SG35 Stow "separated from" acids.

- Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
  - Not applicable.

- Transport/Additional information:
  - DOT
    - Quantity limitations
      - On passenger aircraft/rail: 5 L
      - On cargo aircraft only: 60 L
  - IMDG
    - Limited quantities (LQ): 5L
    - Excepted quantities (EQ)
      - Code: E1
      - Maximum net quantity per inner packaging: 30 ml
      - Maximum net quantity per outer packaging: 1000 ml
  - UN "Model Regulation": UN 2672 AMMONIA SOLUTION, 8, III

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 is listed.
    - Section 313 (Specific toxic chemical listings):
      - CAS: 1336-21-6 Ammonium Hydroxide
    - TSCA (Toxic Substances Control Act):
      - CAS: 1336-21-6 Ammonium Hydroxide
      - CAS: 12125-02-9 Ammonium Chloride, Reagent ACS Grade
    - Proposition 65
      - None of the ingredients is listed.
  - Chemicals known to cause cancer:
    - None of the ingredients is listed.
  - Chemicals known to cause reprotoxicity for females:
    - None of the ingredients is listed.
  - Chemicals known to cause reprotoxicity for males:
    - None of the ingredients is listed.
  - Chemicals known to cause developmental toxicity:
    - None of the ingredients is listed.
  - Carcinogenic categories
    - EPA (Environmental Protection Agency)
      - None of the ingredients is listed.
Trade name: Versenate Hardness  
Buffer Solution

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

- NIOSH-Ca (National Institute for Occupational Safety and Health)
  None of the ingredients is listed.

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

GHS05

- Signal word Danger

- Hazard-determining components of labeling:
  Ammonium Hydroxide

- Hazard statements
  Causes severe skin burns and eye damage.

- Precautionary statements
  Do not breathe dusts or mists.
  Wear protective gloves/protective clothing/eye protection/face protection.
  Wash thoroughly after handling.
  If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
  Wash contaminated clothing before reuse.
  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/doctor.
  Specific treatment (see on this label).
  IF INHALED: Remove person to fresh air and keep comfortable for breathing.
  IF swallowed: Rinse mouth. Do NOT induce vomiting.
  Store locked up.
  Dispose of contents/container in accordance with local/regional/national/international regulations.

- 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: Environment protection department.
- Contact:
- Date of preparation / last revision
  Revision 0.1, 05-15-2015: revised to correct emergency and information contacts.STN
  Creation date for SDS 05-06-14 LS
  Revision 0.2, 07-03-2017: Reviewed SDS. STN
  07/03/2017 / -
- 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)
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 Corr. 1B: Skin corrosion/irritation – Category 1B
Eye Dam. 1: Serious eye damage/eye irritation – Category 1