PRODUCT INFORMATION SHEET

PH TESTER PEN  (Item: 173-1452) - Material Safety Data Sheet

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION
Nikken Chemical Laboratory Co., Ltd.  Sakae 2-16-1, Naka-Ku, Nagoya 460-0008, JAPAN  Preparation Date: 3/18/2013
Emergency Telephone:  +81-52-204-0558  FAX:  +81-52-219-2495

PRODUCT TRADE NAME:  pH Tester Pen (pH 1.0 – 12.0)
Product Use:  pH check on white paper material.

2. COMPOSITION / INFORMATION ON INGREDIENTS:

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>% by Wt Range</th>
<th>CAS Number</th>
<th>EXPOSURE LIMITS 8 hr TWA (PPM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thymol blue</td>
<td>5.00-10.00</td>
<td>76-61-9</td>
<td>OSHA PEL: N/D  ACGIH TLV: N/D</td>
</tr>
<tr>
<td>Cresol red</td>
<td>5.00-10.00</td>
<td>1733-12-6</td>
<td>N/D</td>
</tr>
</tbody>
</table>

3. HAZARDS IDENTIFICATION:

EMERGENCY OVERVIEW
“Ink” in pen is a clear, Clear liquid with a faint odor. Contact with liquid may cause eye, skin, nose, throat, and respiratory tract irritation.
Target Organs: Eyes and Skin. Special handling & work place: Do not take internally. Ventilation in work area should be sufficient. Remove and wash contaminated clothing immediately.

HMIS HAZARD CLASS

<table>
<thead>
<tr>
<th>HEALTH</th>
<th>FLAMMABILITY</th>
<th>REACTIVITY</th>
<th>PROTECTIVE EQUIPMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Blue) 2</td>
<td>(Red) 2</td>
<td>(Yellow) 0</td>
<td>B</td>
</tr>
</tbody>
</table>

HAZARD INDEX:
0=Minimal Hazard 1=Slight Hazard 2=Moderate Hazard 3=Serious Hazard 4=Severe Hazard

POTENTIAL HEALTH EFFECTS
EYES: Exposure may cause eye irritation, redness, pain, and burning.
SKIN CONTACT: Exposure may cause skin irritation. Symptoms may include redness, burning, drying and cracking, skin burns, and skin damage.
INGESTION: May cause nausea and vomiting. Toxicity effects may include paralysis of eye muscles, convulsions, rapid heart beat, kidney abnormalities, and possible cardiac failure. This material can enter the lungs during swallowing or vomiting and cause lung inflammation and/or damage.
INHALATION: May cause respiratory tract irritation. Heated or misted substance may cause headache, irregular eye movements, and possible coma.
CHRONIC (CANCER) INFORMATION: May have the potential for causing reproductive damage in human.
ACUTE EFFECTS: Ethanol in this product may irritates the eyes. Inhalation of high concentration of vapor may cause irritation of the eyes and respiratory tract. May cause effects on the central nervous system.
OTHER HEALTH HAZARDS: Long-term or repeated exposure may dry the skin. Ethanol in this product may have effects on the upper respiratory tract and central nervous system, resulting in irritation, headache, fatigue and lack of concentration. Chronic ingestion of ethanol may cause liver cirrhosis. International misuse by deliberately concentrating & inhaling this product may be harmful or fatal.

4. FIRST AID MEASURES:
EYES: First rinse with plenty of water for at least 15 minutes (remove contact lenses if easily possible), then get medical help.
SKIN: Remove contaminated clothes. Rinse and then wash skin with water and soap. Get medical help if irritation develops and persists.
INGESTION: Rinse mouth. Refer for medical attention.
INHALATION: Remove to fresh air and rest.
NOTE TO PHYSICIAN: Treat symptomatically and supportively.
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5. FIRE FIGHTING MEASURES:
FLASH POINT: N/D
LOWER EXPLOSIVE LIMITS: N/D  UPPER EXPLOSIVE LIMITS: N/D
EXTINGUISHING MEDIA: Use powder, alcohol-resistant foam, water in large amounts, carbon dioxide.
FIRE-FIGHTING INSTRUCTIONS: Firemen should wear a self-contained breathing apparatus with a full facepiece operated in the positive pressure demand mode with appropriate turn-out gear and chemical resistant personal protective equipment.
FIRE & EXPLOSION HAZARDS: This product is combustible and may be ignited by heat or flame.

6. ACCIDENTAL RELEASE MEASURES: ***Large Spills*** Eliminate potential sources of ignition. Wear appropriate respirator and other protective clothing. Shut off source of leak only if it is safe to do so. Prevent from entering drains, sewer, streams or other bodies of water. Prevent from spreading. If runoff occurs, notify authorities as required. Pump or vacuum transfer spilled product to a non-leaking containers and seal tightly for proper disposal. Absorb unrecoverable product. Transfer contaminated absorbent, soil and other materials to containers for disposal.

pH Tester Pen (pH 1.0 – 12.0)

7. HANDLING AND STORAGE: Cause eye and skin irritation. Do not get in eyes, on skin, on clothing. Avoid ingestion and inhalation. Wash thoroughly after handling. Keep away from sources of ignition. “Empty containers retain product residue, (liquid and / vapor), and can be dangerous”. Do not cut, weld, pressurize, braze, solder, grind, drill, or expose such containers to heat, sparks or open flames. Empty drums should be completely drained, properly bunged, and promptly returned and disposed of. Prevent build up of vapors to explosive concentration. Keep away from sources of ignition. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Use with adequate ventilation. Maintain good housekeeping. FOR INDUSTRIAL USE ONLY. “KEEP OUT OF REACH OF CHILDREN”.

8. EXPOSURE CONTROLS, PERSONAL PROTECTION:
Engineering controls: Local exhaust ventilation may be necessary to keep airborne concentrations below the permissible exposure limits-SEE SECTION 2. Use explosion-proof ventilation as required to control vapor concentrations.
PERSONAL PROTECTIVE EQUIPMENT (PPE):
RESPIRATORY PROTECTION: Avoid prolonged or repeated breathing of vapors. If exposure may or does exceed occupational exposure limits (Sec. 2) use a NIOSH-Approved respirator to prevent overexposure. In accord with 29 CFR 1910.134. Use either an atmosphere-supplying respirator or an air-purifying respirator for organic vapors.
EYE PROTECTION: Use safety glasses or goggles as appropriate (29 CFR 1910.133).
SKIN: Wear solvent resistant gloves.
OTHER CLOTHING AND EQUIPMENT: It is suggested that a source of clean water be available in the work area for flushing eyes and skin. Impervious clothing should be worn as needed.

9. PHYSICAL AND CHEMICAL PROPERTIES:
Solubility in Water: Soluble. Specific Gravity: 0.98
Boiling Point: Approx. 80°C  Melting Point: 95°C
Vapor Density: >1 (air=1)  Vapor Pressure: 25.5 mm Hg

10. STABILITY AND REACTIVITY:
STABILITY: Stable at room temperature in closed containers under normal storage and handling condition.
CONDITIONS TO AVOID: High heat, ignition sources, open flame.
HAZARDOUS POLYMERIZATION: Has not been reported.
INCOMPATIBILITY WITH OTHER MATERIALS: Strong oxidizing agents.
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon dioxide, carbon monoxide, and various hydrocarbons.

11. TOXICOLOGICAL INFORMATION:
LD50: Not available.
Acute Overexposure: Irritating to skin and eyes by contact. Hydrofluoric acid causes severe, slow-healing burns and may be absorbed through skin. Irritating to respiratory tract if inhaled. May cause headache, dizziness and narcosis. Irritating to gastrointestinal tract if ingested. May cause vomiting, diarrhea and abdominal cramps.
Chronic Overexposure: May cause liver and kidney damage. Hydrofluoric acid is an experimental teratogen. Intentional concentration and inhalation of vapors may cause respiratory stimulation followed by collapse. May cause anemia and leukopenia.

cont.
12. **ECOLOGICAL INFORMATION:** N/D.

13. **DISPOSAL CONSIDERATIONS:** Dispose in a manner consistent with federal, state, and local regulations. Refer to latest EPA or State Regulations regarding proper disposal.

14. **TRANSPORT INFORMATION:** Not DOT regulated. Product is labeled in accordance with U.S. 49CFR.

15. **REGULATORY INFORMATION:**
   - **Toxic Substances Control Act (TSCA):** The chemical components of this product are listed or have been registered for inclusion on the Section 8(B) Chemical Substance Inventory List (40 CFR 710).

16. **OTHER INFORMATION:** All information appearing herein is based upon Data obtained from Manufacturer and/or recognized technical sources. However, the information is provided without any warranty, express or implied, regarding its correctness. The conditions or methods of handling, storage, use or disposal of the material are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use, disposal of the material. It is the use’s responsibility to satisfy oneself as to the suitability and completeness of this information for his own particular use. To the best of our knowledge, the information contained herein is accurate. However, neither Nåkken Chemical Laboratory Co., Ltd., nor any of its distributors assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist.