MATERIAL SAFETY DATA SHEET

EASTMAN KODAK COMPANY
343 State Street
Rochester, New York 14650

For Emergency Health, Safety, and Environmental Information, call 716 722-5151
For other purposes, call the Marketing and Distribution Center in your area.

Revised Date of Preparation: 5/11/88          Kodak Accession Number: 354752

SECTION I. IDENTIFICATION

- Product Name: KODAK Indicator Stop Bath
- Formula: Aqueous Mixture
- Kodak Photographic Chemicals Catalog Number(s): CAT 146 4247 - 16 Fluid Ounces; CAT 140 8731 - 1 Gallon
- Solution Number: 2838
- Kodak Hazard Rating Codes: R: 2 S: 3 F: 2 C: 0

SECTION II. PRODUCT AND COMPONENT HAZARD DATA

<table>
<thead>
<tr>
<th>COMPONENT(S):</th>
<th>Weight Percent</th>
<th>ACGIH TLV</th>
<th>Kodak Accession No.</th>
<th>CAS Reg. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetic acid</td>
<td>85-90</td>
<td>10 ppm**</td>
<td>900763</td>
<td>64-19-7</td>
</tr>
<tr>
<td>Water</td>
<td>10-15</td>
<td>---</td>
<td>035290</td>
<td>7732-18-5</td>
</tr>
</tbody>
</table>

**Principal Hazardous Component(s)

**See Section VI-A for additional information on exposure limits.

SECTION III. PHYSICAL DATA

- Appearance and Odor: Clear to slightly yellow solution; sharp vinegar odor
- Boiling Point: GT 100 °C (GT 212 °F) @ 760 mmHg
- Vapor Pressure: ca. 14.6 mmHg @ 20 °C
- Evaporation Rate (n-butyl acetate = 1): Not Available
- Vapor Density (Air = 1): GT 1.9
- Volatile Fraction by Weight: ca. 100 %
- Specific Gravity (H2O = 1): 1.07
- pH: ca. 2.0
- Solubility in Water (by Weight): Complete

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SECTION IV. FIRE AND EXPLOSION HAZARD DATA

- Flash Point: 55 C (131 F) Tag open cup, see below.
- Extinguishing Media: Water spray; Dry chemical; CO2
- Special Fire Fighting Procedures: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
- Unusual Fire and Explosion Hazards: No closed cup flash point in standard apparatus due to flame quenching. However, in vessels of adequate size, vapors are flammable above 42 C (108 F).

SECTION V. REACTIVITY DATA

- Stability: Stable
- Incompatibility: Strong oxidizers, Alkali
- Hazardous Decomposition Products: Combustion will produce carbon dioxide and probably carbon monoxide.
- Hazardous Polymerization: Will not occur.

SECTION VI. TOXICITY AND HEALTH HAZARD DATA

A. EXPOSURE LIMITS:
   See Section II
   OSHA Permissible Exposure Limit (PEL): 10 ppm - TWA (acetic acid)
   Threshold Limit Value (TLV) 10 ppm, 8-h TWA, ACGIH 1987-88.

B. EXPOSURE EFFECTS:

   Inhalation: Acetic acid vapor is irritating to the upper respiratory tract. Unacclimatized humans experience extreme eye and nasal irritation at concentrations in excess of 25 ppm. Fifty ppm is intolerable; however, acclimatized workers may tolerate concentrations up to 30 ppm. Exposures to such vapor concentrations have produced neither severe systemic injury nor death. This is most probably due to the fact that acetic acid is readily metabolized within the body. Repeated exposures to high vapor concentrations may produce respiratory tract irritation with pharyngeal edema, chronic bronchitis, discoloration of the teeth, and thickening of the skin.(1)

   Eyes: Severe eye burns can result from direct contact with the liquid. Vapors are very irritating to the eyes.

   Skin: Causes severe skin burns. These are deep burns and usually slough in a day or two. Concentrations below approximately 50 % acetic acid are moderately irritating to the skin and usually cause minimal injury if promptly removed from the skin. Sensitivity dermatitis has been reported.(1)
Ingestion: The ingestion of concentrated acetic acid (Approx 95%) produces burns of the upper digestive tract. This is characterized by severe pain in the mouth, pharynx, esophagus, and stomach. There may be immediate vomiting with diarrhea and possible bloody stools. The ingestion of as little as 1.0 mL of 100% (glacial) acetic acid has resulted in perforation of the esophagus. Severe intestinal irritation with gross bleeding, collapse, and death has been reported. Vinegar, a dilute impure solution containing acetic acid at approximately 4% to 7% concentration, is a common item of the human diet.(1)

C. FIRST AID:

Inhalation: Remove to fresh air. Treat symptomatically. If symptoms are present, get medical attention.

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes and get medical attention immediately.

Skin: Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Wash contaminated clothing before reuse.

Ingestion: Do not induce vomiting. If conscious give one glass of milk or water. Never give anything by mouth to an unconscious person. CALL A PHYSICIAN AT ONCE.

D. TOXICITY DATA (For Glacial Acetic Acid, Approx 95%)

<table>
<thead>
<tr>
<th>Test</th>
<th>Species</th>
<th>Result</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Oral LD50</td>
<td>Rat</td>
<td>3.3 g/kg(2)</td>
<td>Slightly toxic</td>
</tr>
<tr>
<td>Acute Oral LD50</td>
<td>Mouse</td>
<td>4.9 g/kg(2)</td>
<td></td>
</tr>
<tr>
<td>Inhalation LC50 (4 h)</td>
<td>Rat</td>
<td>16,000 ppm(2)</td>
<td></td>
</tr>
<tr>
<td>Inhalation LC50 (1 h)</td>
<td>Mouse</td>
<td>5620 ppm(2)</td>
<td></td>
</tr>
<tr>
<td>Skin Absorption LD50</td>
<td>Rabbit</td>
<td>1.06 g/kg(2)</td>
<td>Slightly toxic</td>
</tr>
<tr>
<td>Skin Irritation</td>
<td>Guinea Pig</td>
<td>Severe burns(3)</td>
<td></td>
</tr>
<tr>
<td>Eye Irritation</td>
<td>Rabbit</td>
<td>Complete destruction(3)</td>
<td></td>
</tr>
</tbody>
</table>

SECTION VII. VENTILATION AND PERSONAL PROTECTION

A. VENTILATION: Good general ventilation* should be used. Local exhaust ventilation or an enclosed handling system may be needed to control air contamination to acceptable levels.

*Typically 10 room volumes per hour is considered good general ventilation: Ventilation rates should be matched to conditions of use.

B. RESPIRATORY PROTECTION: A NIOSH approved acid gas respirator should be worn if needed. If respirators are used, a program should be instituted to assure compliance with OSHA standard 29CFR 1910.134.
C. SKIN AND EYE PROTECTION:
   Wear goggles or face shield.
   Impervious gloves and clothing should be worn.

SECTION VIII. SPECIAL STORAGE AND HANDLING PRECAUTIONS

   Treat as a combustible liquid. Keep away from heat and flame.
   Keep from contact with oxidizing materials.
   Avoid contact with alkalis.

SECTION IX. SPILL, LEAK, AND DISPOSAL PROCEDURES

   Remove all sources of ignition.
   Neutralize with baking soda (sodium bicarbonate).
   Flush material to sewer with large amounts of water.
   Wash contaminated area well with soap and water.
   Discharge, treatment, or disposal may be subject to federal, state,
   or local laws.

SECTION X. ENVIRONMENTAL EFFECTS DATA

   This chemical formulation has a high biological oxygen demand, and
   it is expected to cause significant oxygen depletion in aquatic
   systems. It is expected to have a low potential to affect aquatic
   organisms, secondary waste treatment microorganisms, and the
   germination and growth of some plants. The components of this
   chemical formulation are readily biodegradable and are not likely to
   bioconcentrate. When diluted with water, this chemical formulation
   released directly or indirectly into the environment is not expected
   to have a significant impact. (3)

SECTION XI. TRANSPORTATION

For transportation information regarding this product, please phone the
Eastman Kodak Distribution Center nearest you: Rochester, NY (716) 588-9293;
Oak Brook, IL (312) 954-6000; Chamblee, GA (404) 455-0123; Dallas, TX (214)
241-1611; Whittier, CA (213) 693-5222; Honolulu, HI (808) 833-1661.

SECTION XII. REFERENCES

   of Acetic Acid.

2. Registry of Toxic Effects of Chemical Substances, U.S. Department of

3. Toxicity results are from unpublished data, Health and Environment

4. Hodge, H.C. and Sterner, J.H., American Industrial Hygiene
   Association Quarterly, 10, 93 (1949).

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The information contained herein is furnished without warranty of any kind. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of the suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers.

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