SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND THE COMPANY

1.1 Product Identifier
- Trade Name: Schiff Reagent
- Product #: 3803800
- SDS #: 137
- SDS Date: August 22, 2013

1.2 Relevant Identified Uses of the Substance or Mixture and Uses Advised Against
- Product Use: Periodic Acid Schiff procedure
- Uses Advised Against: All other uses.

1.3 Details of the Supplier of the Substance or Mixture
- Manufacturer/Preparer:
  - Leica Biosystems Richmond, Inc.
  - 5205 Route 12
  - Richmond, IL 60071
  - 800-225-8867
  - Leica Biosystems Canada, Inc.
  - 83 Terracon Place
  - Winnipeg, Manitoba R2J 4B3
  - 800-665-7425

1.4 Emergency Telephone Number
- Emergency Spill Information: 1-800-424-9300 (CHEMTREC)
  +1-703-527-3887 International calls (call collect)
- Other Product Information: 1-800-225-8867

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the Substance or Mixture

CLP/GHS Classification (1272/2008):

<table>
<thead>
<tr>
<th>Physical:</th>
<th>Health:</th>
<th>Environmental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrosive to metals Category 1</td>
<td>Carcinogen Category 1B</td>
<td>Not Hazardous</td>
</tr>
</tbody>
</table>

EU Classification (67/548/EEC): Carc. Cat 2, R45

2.2 Label Elements:
DANGER! Contains basic fuchsin (4,4’-(4-iminocylohexa-2,5-dienyldienemethylene)dianiline hydrochloride) and hydrochloric acid.

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Hazard Phrases

H290  May be corrosive to metals
H350  May cause cancer

Precautionary Phrases

P201  Obtain special instructions before use.
P202  Do not handle until all safety precautions have been read and understood.
P234  Keep only in original container.
P308 + P313  IF exposed or concerned: Get medical advice/attention.
P390  Absorb spillage to prevent material damage.
P405  Store locked up.
P406  Store in corrosive resistant container with a resistant inner liner.
P501  Dispose of container/contents to approved disposal site in accordance with all local and national regulations.

2.3 Other Hazards: None

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS Number / EINECS Number / REACH Reg. Number</th>
<th>% (w/w)</th>
<th>EU Classification (67/548/EEC)</th>
<th>CLP/GHS Classification (1272/2008)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium bisulfite</td>
<td>7631-90-5, 231-548-0</td>
<td>&lt; 2</td>
<td>Xn, R22, R31</td>
<td>Acute Toxicity Category 3 (H302)</td>
</tr>
<tr>
<td>Hydrochloric acid</td>
<td>7647-01-0, 231-595-7</td>
<td>&lt;1</td>
<td>C, R34, R37</td>
<td>Skin Corrosive Category 1B (H314)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Eye Damage Category 1 (H318)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Specific Target Organ Toxicity –</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Single Exposure Category 3 (H335)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Corrosive to metals Category 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(H290)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Aquatic Toxicity Acute Category 3</td>
</tr>
<tr>
<td>Basic Fuchsin</td>
<td>569-61-9, 209-321-2</td>
<td>&lt;0.5</td>
<td>Carc. Cat 2; R45</td>
<td>Carcinogen Category 1B (H350)</td>
</tr>
</tbody>
</table>

See Section 16 for full text of GHS and EU Classifications.

SECTION 4: FIRST AID MEASURES

4.1 Description of First Aid Measures

First Aid

**Eye contact:** Flush eye with water while lifting the upper and lower lids apart. Get medical attention if irritation persists.

**Skin contact:** Wash with soap and water. Get medical attention if irritation develops. Remove contaminated clothing and launder before reuse.

**Inhalation:** Remove victim to fresh air. Get medical attention if irritation persists.

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Ingestion: If small quantities are swallowed, rinse out mouth with water. Do not induce vomiting. Never give anything by mouth to an unconscious or drowsy person. If large amounts are swallowed or if irritation or discomfort occurs, get medical attention.

See Section 11 for more detailed information on health effects.

4.2 Most Important symptoms and effects, both acute and delayed: May cause eye, skin and respiratory irritation.

4.3 Indication of any immediate medical attention and special treatment needed: No immediate treatment is normally required.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing Media:
Use any media that is suitable for the surrounding fire.

5.2 Special Hazards Arising from the Substance or Mixture
   Unusual Fire and Explosion Hazards: None.
   Combustion Products: Oxides of sulfur, smoke, hydrogen chloride, chlorine.

5.3 Advice for Fire-Fighters: Self-contained breathing apparatus and protective clothing should be worn in fighting large fires involving chemicals. Determine the need to evacuate or isolate the area according to your local emergency plan. Use water spray to keep fire exposed containers cool.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions, Protective Equipment and Emergency Procedures:
Wear appropriate protective equipment. Eliminate all ignition sources and ventilate the area. Prevent entry into basements or confined areas.

6.2 Environmental Precautions:
Prevent entry in storm sewers and waterways. Report spill as required by local and federal regulations.

6.3 Methods and Material for Containment and Cleaning Up:
Stop spill at the source if it is safe to do so. Absorb with an inert material. Collect into a suitable container for disposal.

6.4 Reference to Other Sections:
Refer to Section 8 for personal protective equipment, and Section 13 for disposal information.

SECTION 7: HANDLING and STORAGE

7.1 Precautions for Safe Handling:
Avoid eye and skin contact. Avoid breathing vapors. Use with adequate ventilation. Wash thoroughly after handling. Remove contaminated clothing and launder before re-use. Keep containers closed when not in use.

7.2 Conditions for Safe Storage, Including any Incompatibilities:
Protect containers from physical damage. Store in a cool area. Keep containers closed when not in use. Store away from oxidizers.

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Empty containers retain product residues. Do not cut, weld, braze, etc. on or near empty containers. Follow all SDS precautions in handling empty containers.

7.3 Specific end use(s):
Industrial uses: None identified
Professional uses: Fixation and decalcification of tissue

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control Parameters:

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>US OEL</th>
<th>EU IOEL</th>
<th>UK OEL</th>
<th>Germany OEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium bisulfate</td>
<td>5 mg/m3 TWA ACGIH TLV</td>
<td>None Established</td>
<td>5 mg/m3 TWA ACGIH TLV</td>
<td>None Established</td>
</tr>
<tr>
<td>Hydrochloric acid</td>
<td>5 ppm Ceiling OSHA PEL</td>
<td>5 ppm TWA, 10 ppm STEL</td>
<td>1 ppm TWA, 5 ppm STEL</td>
<td>2 ppm Ceiling</td>
</tr>
<tr>
<td>Basic Fuchsin</td>
<td>None Established</td>
<td>None Established</td>
<td>None Established</td>
<td>None Established</td>
</tr>
</tbody>
</table>

Refer to local or national authority for exposure limits not listed above.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Biological Limit Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium bisulfite</td>
<td>None Established</td>
</tr>
<tr>
<td>Hydrochloric acid</td>
<td>None Established</td>
</tr>
<tr>
<td>Basic Fuchsin</td>
<td>None Established</td>
</tr>
</tbody>
</table>

8.2 Exposure Controls:
Recommended Monitoring Procedures:
Sodium bisulfate: Collection on filters with analysis by gravimetric analysis.
Hydrochloric acid: Collection on silica gel tubes with analysis by ion chromatography.

Appropriate Engineering Controls: Use with adequate general or local exhaust ventilation to maintain exposure levels below the occupational exposure limits.

Personal Protective Measurers

Eye/face Protection: Wear safety glasses.

Skin Protection: Impervious clothing as needed to avoid skin contact.

Hands: Impervious gloves recommended (neoprene or nitrile rubber).

Respiratory Protection: None needed with adequate ventilation. If the occupational exposure limit is exceeded, use an approved dust / mist / acid respirator. Selection of respiratory protection depends on the contaminant type, form and concentration. Select in accordance with OSHA 1910.134 or other applicable regulations and good Industrial Hygiene practice.

Other protection: Suitable washing facilities should be available.

SECTION 9: PHYSICAL and CHEMICAL PROPERTIES
9.1 Information on basic Physical and Chemical Properties

- **Appearance:** Colorless liquid
- **Odor Threshold:** Not determined
- **Melting/Freezing Point:** Not determined
- **Flash Point:** Not applicable
- **Lower Flammability Limit:** Not applicable
- **Vapor Density (Air=1):** Not determined
- **Solubility:** Soluble in water
- **Autoignition Temperature:** Not applicable
- **Oxidizing Properties:** None
- **Molecular Formula:** Mixture

- **Odor:** Odorless
- **pH:** ~ 1.6
- **Boiling Point:** 100°C (212°F)
- **Evaporation Rate:** Not determined
- **Vapor Pressure:** Not determined
- **Relative Density:** 1.45
- **Octanol/Water Partition Coefficient:** Not available
- **Decomposition Temperature:** Not established
- **Explosive Properties:** None
- **Specific Gravity (H₂O= 1):** 1.45
- **Molecular Weight:** Mixture

9.2 Other Information: None available

### SECTION 10: STABILITY and REACTIVITY

10.1 Reactivity: This material is reactive with oxidizing materials, metals, and bases.

10.2 Chemical Stability: Normally stable.

10.3 Possibility of Hazardous Reactions: None expected.

10.4 Conditions to Avoid: None known

10.5 Incompatible Materials: Oxidizing agents, metals, and bases.

10.6 Hazardous Decomposition Products: Thermal breakdown of this product during fire or very high heat conditions may evolve the following decomposition products: oxides of sulfur, hydrogen chloride, chlorine.

### SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on Toxicological Effects:

Potential Health Effects:

- **Eye Contact:** May cause irritation.
- **Skin contact:** May cause mild irritation. Prolonged or repeated exposure may cause dryness or dermatitis.
- **Inhalation:** May cause mild respiratory tract irritation.
- **Ingestion:** Small amounts are not anticipated to cause adverse effects. Sulfite sensitive individuals may experience a severe allergic reaction.

Acute toxicity:

- Hydrochloric acid: LD₅₀ oral rat 238-277 mg/kg; LC₅₀ inhalation rat 3124 ppm/1 hr; LD₅₀ dermal mouse 1449 mg/kg
- Basic Fuchsin: LD₅₀ oral mouse 5,000 mg/kg
- Sodium bisulfite: LD₅₀ oral rat 2,000 mg/kg
**Skin corrosion/irritation:** No data available for mixture. Not classified as an irritant.

**Eye damage/irritation:** No data available for mixture. Components are damaging to eyes, but not classified as an eye irritant.

**Respiratory Irritation:** No data available for mixture. Vapors may be irritating to the respiratory system.

**Respiratory Sensitization:** No data available for mixture. None of the components are respiratory sensitizers.

**Skin Sensitization:** No data available for mixture. None of the components are skin sensitizers.

**Germ Cell Mutagenicity:** No data available for mixture. None of the components are germ cell mutagens.

**Carcinogenicity:** Basic Fuchsin is classified by IARC as “Possibly Carcinogenic to Humans” (Group 2B) and “Reasonably Anticipated to be a Human Carcinogen” by NTP.

**Reproductive Toxicity:** No data available for mixture. This product is not expected to cause adverse reproductive effects.

**Specific Target Organ Toxicity:**

- Single Exposure: Hydrochloric acid mists are damaging to lungs in high concentrations.
- Repeat Exposure: None known.

### SECTION 12: ECOLOGICAL INFORMATION

**12.1 Toxicity:**

- Hydrochloric acid: LC50 Oncorhynchus mykiss (Rainbow trout) 7.45 mg/L/96 hr
- Sodium bisulfite: No data available.
- Basic Fuchsin: No data available.

**12.2 Persistence and degradability:** Hydrogen chloride dissociates readily in water to chloride and hydronium ions, decreasing the pH of the water.

**12.3 Bioaccumulative Potential:** Hydrogen chloride dissociates readily and is not expected to be bioaccumulative.

**12.4 Mobility in Soil:** Hydrogen chloride dissociates into chloride and hydronium ions in moist soil.

**12.5 Results of PVT and vPvB assessment:** Not required.

**12.6 Other Adverse Effects:** Large releases may alter the pH of aquatic environment and damage aquatic life.
SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste Treatment Methods:  
Dispose in accordance with local, state and national regulations.

SECTION 14: TRANSPORTATION INFORMATION

<table>
<thead>
<tr>
<th>UN Number</th>
<th>Proper Shipping Name</th>
<th>Hazard Class(s)</th>
<th>Packing Group</th>
<th>Environmental Hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>US DOT</td>
<td>Hydrochloric Acid</td>
<td>8</td>
<td>III</td>
<td>No</td>
</tr>
<tr>
<td>Canadian TDG</td>
<td>Hydrochloric Acid</td>
<td>8</td>
<td>III</td>
<td>No</td>
</tr>
<tr>
<td>EU ADR/RID</td>
<td>Hydrochloric Acid</td>
<td>8</td>
<td>III</td>
<td>No</td>
</tr>
<tr>
<td>IMDG</td>
<td>Hydrochloric Acid</td>
<td>8</td>
<td>III</td>
<td>No</td>
</tr>
<tr>
<td>IATA/ICAO</td>
<td>Hydrochloric Acid</td>
<td>8</td>
<td>III</td>
<td>No</td>
</tr>
</tbody>
</table>

14.6 Special Precautions for User: None  
14.7 Transport in Bulk According to Annex III MARPOL 73/78 and the IBC Code: Not determined.

SECTION 15: REGULATORY INFORMATION

15.1 Safety, Health and Environmental Regulations/Legislation Specific for the Substance or Mixture

INTERNATIONAL INVENTORIES

EPA TSCA INVENTORY: All of the components are listed on the TSCA inventory.

CANADIAN ENVIRONMENTAL PROTECTION ACT: All of the ingredients are listed on the Canadian Domestic Substances List.

EUROPEAN UNION: All of the components of this product are listed on the European Inventory of New and Existing Chemical Substances (EINECS) inventory.

CHINA: All of the ingredients are listed on the Chinese chemical inventory.

NEW ZEALAND: All of the components of this product are listed on the New Zealand Inventory of Chemicals (NzIoC).

PHILIPPINES: All of the components of this product are listed on the Philippine Inventory of Chemicals and Chemical Substances (PICCS).

U.S. REGULATIONS

OSHA HAZARD CLASSIFICATION: Carcinogen

CERCLA Section 103: The RQ for the product, based on the RQ for Sodium bisulfite (2% maximum) of 5000 lbs, is 250,000 lbs. Many states have more stringent release reporting requirements. Report spills required under federal, state and local regulations.

EPA SARA 302: This product does not contain chemicals regulated under SARA Section 302.

EPA SARA 311 HAZARD CLASSIFICATION: Chronic Health

EPA SARA 313: This product contains the following chemicals that are regulated under SARA Title III, section 313:

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CALIFORNIA PROPOSITION 65: This product contains the following chemicals which are known to the State of California to cause cancer or reproductive toxicity: Basic Fuchsin (cancer)

INTERNATIONAL REGULATIONS

WHMIS CLASSIFICATION: Class D-2-A

SECTION 16: OTHER INFORMATION

Revision History: Updated Logo and website.

EU Classes and Risk Phrases for Reference (See Sections 2 and 3)
Carc. Cat 2 Carcinogen Category 2
C Corrosive
Xn Harmful
R22 Harmful if swallowed.
R31 Contact with acid liberates toxic gas
R45 May cause cancer.
R34 Causes burns
R37 Irritating to respiratory system

CLP/GHS Classification and H Phrases for Reference (See Section 3)
H290 May be corrosive to metals
H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage
H318 Causes serious eye damage
H335 May cause respiratory irritation
H350 May cause cancer
H402 Harmful to aquatic life

NFPA Rating: Health: 1 Fire: 0 Instability: 0
HMIS Rating: Health: 1* Fire: 0 Physical Hazard: 0

This Safety Data Sheet has been prepared in accordance with the REACH regulation in the EU and the Globally Harmonized System for the Classification and Labeling of Chemicals (GHS). It complies with the requirements of the Canadian Controlled Products Regulations and US 29CFR 1910.1200. To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries makes any warranty of merchantability or any other warranty, expressed or implied, which respect to such information, and we assume no liability resulting from its use. In no event shall Leica Biosystems be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages resulting from use of or reliance upon this information.