SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product: Methylene Blue Stain
Cat. No: MB 119

Molecular Research Center, Inc.
5645 Montgomery Rd.
Cincinnati, Ohio 45212
USA 1-888-841-0900
Fax: 513-841-0080

Product Name: Methylene Blue Stain
Application: Detection of immobilized nucleic acids on hybridization membranes.
Chemical Formula: formulation
Molecular Weight: not applicable
Synonyms: Aizen Methylene Blue BH or FZ, Basic Blue 9, Methylthionine, Methylthionine Chloride, Tetramethylene Blue.

CHEMTREC EMERGENCY NUMBER: Only in the event of an emergency involving a spill, leak, fire exposure or accident. USA: 1-800-424-9300; International: 1-703-527-3887; Non-emergency: 1-281-441-4400.

2. HAZARD IDENTIFICATION

OSHA
Harmful by ingestion, Irritant

GHS - Classification
Acute toxicity, oral (Category 4)
Skin irritation (Category 2)
Eye Irritation (Category 2B)
Acute toxicity, inhalation (Category 5)

GHS Label elements
Pictogram

Signal word  Warning
### Health Hazard

<table>
<thead>
<tr>
<th>Hazard Class</th>
<th>Hazard category</th>
<th>Code</th>
<th>Health Hazard Statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity, oral</td>
<td>Category 4</td>
<td>H302</td>
<td>Harmful if swallowed</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>Category 2</td>
<td>H315</td>
<td>Causes skin irritation</td>
</tr>
<tr>
<td>Serious eye damage/irritation</td>
<td>Category 2B</td>
<td>H320</td>
<td>Causes eye irritation</td>
</tr>
<tr>
<td>Acute toxicity, inhalation</td>
<td>Category 5</td>
<td>H333</td>
<td>May be harmful if inhaled</td>
</tr>
</tbody>
</table>

### Precautionary statements

<table>
<thead>
<tr>
<th>Code</th>
<th>Prevention precautionary statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>P233</td>
<td>Keep container tightly closed.</td>
</tr>
<tr>
<td>P261</td>
<td>Avoid breathing dust, fume, gas, mist, vapor, spray.</td>
</tr>
<tr>
<td>P264</td>
<td>Wash...thoroughly after handling.</td>
</tr>
<tr>
<td>P270</td>
<td>Do not eat, drink or smoke when using this product.</td>
</tr>
<tr>
<td>P281</td>
<td>Use personal protective equipment as required.</td>
</tr>
<tr>
<td>P305+P351+P338</td>
<td>If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.</td>
</tr>
</tbody>
</table>

### ROUTES OF EXPOSURE:

<table>
<thead>
<tr>
<th>Routes</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin</td>
<td></td>
</tr>
<tr>
<td>Ingestion</td>
<td>Yes</td>
</tr>
<tr>
<td>Inhalation</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### OVERVIEW

Methylene blue is relatively non-hazardous in routine industrial situations.

### ACUTE EFFECTS

**SKIN CONTACT:** Solution may cause skin and eye irritation. Absorption into the body may lead to formation of methemoglobin, which in sufficient concentration causes cyanosis. Possible delayed onset = 2 to 4 hrs. Exposure can cause stomach pains, vomiting, diarrhea, nausea, dizziness and headache. Methylene blue exposure may color skin a bluish color. May cause photosensitization.

**CHRONIC EFFECTS:** Laboratory experiments have shown mutagenic effects. Target organ: blood.

### HMIS Classification

- **Health Hazard:** 2
- **Flammability:** 0
- **Physical hazards:** 0
- **PPE = C**

### NFPA Rating

- **Health Hazard:** 2
- **Fire:** 0
- **Reactivity:** 0

### 3. COMPOSITION/Information on Ingredients

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methylene Blue Stain</td>
<td>CAS-No 61-73-4</td>
<td>&lt; 10 %</td>
</tr>
</tbody>
</table>
4. FIRST AID

**EYE CONTACT:** Check for and remove contact lenses. Flush with water in eyewash for at least 15 minutes, holding eyelids open. Obtain medical attention if discomfort or medical symptoms persist.

**SKIN CONTACT:** Remove contaminated clothing. Wash with soap and copious amounts of water for 15 minutes. Decontaminate body surface with running water and nonabrasive soap. Obtain medical attention if discomfort or symptoms persist. Wash contaminated clothing before reusing.

**INHALATION:** Remove to fresh air. Provide oxygen if breathing is difficult.

**INGESTION:** Remove dentures, if any. Wash mouth and throat if conscious. Do not induce vomiting unless directed to do so by medical personnel. Lower head so vomit will not reenter the mouth or throat. Never give an unconscious person anything to ingest. Obtain medical attention.

5. FIRE FIGHTING MEASURES

**EXTINGUISHING MEDIA:** Utilize water spray, carbon dioxide, dry chemical powder or appropriate foam.

**SPECIAL FIREFIGHTING PROCEDURES:** Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** Emits toxic fumes under fire conditions.

6. ACCIDENTAL RELEASE MEASURES

Wear self-contained breathing apparatus, rubber boots, and heavy gloves. Clean up area and hold spill in bag for waste disposal. Ventilate area and wash spill site. Do not let product enter drains. To dispose of waste, dissolve/mix with a combustible solvent and burn in a chemical incinerator with afterburner and scrubber. Observe all federal, state and local environmental regulations.

7. HANDLING AND STORAGE

Keep container tightly closed and store reagent in a cool and dry place. Avoid inhalation. Use chemical safety goggles, latex gloves, lab coat, NIOSH/MSHA-approved respirator. Wash hands thoroughly after handling. Avoid skin contact and inhalation. Wear eye protection and gloves when handling. Keep container tightly sealed to minimize evaporation. Avoid eating and smoking in work areas.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

**PERSONAL PROTECTIVE EQUIPMENT:** Wear eye protection, lab coat and gloves for routine operations. Avoid inhalation, contact with eyes and skin. Ensure access to safety shower and eye bath. The product contains no substances
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of the workday.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

<table>
<thead>
<tr>
<th>Description:</th>
<th>Blue liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melting point:</td>
<td>109°C</td>
</tr>
<tr>
<td>Solubility:</td>
<td>1g/25 ml water</td>
</tr>
<tr>
<td></td>
<td>1 g/65 ml alcohol</td>
</tr>
<tr>
<td></td>
<td>Insoluble in ether</td>
</tr>
</tbody>
</table>

**10. STABILITY AND REACTIVITY**

**STABILITY:** Stable under normal temperature and pressure.

**INCOMPATIBILITIES:** Strong oxidizing agents, acids and alkalis. Avoid heat and flames. May emit toxic fumes under fire conditions.

**HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS:** Toxic fumes of carbon monoxide, carbon dioxide, nitrogen oxides, sulfur oxides, and hydrogen chloride gases.

**11. TOXICOLOGICAL INFORMATION**

RTECS NO: SO5600000. **Rat:** oral, LD$_{50}$=1180 mg/kg; **Mouse:** oral LD$_{50}$=3500 mg/kg. **Target organ or tissue:** Lung, (thorax or respiration). Blood (cyanosis). POSSIBLE MUTAGEN. SEE RTECS ENTRY FOR COMPLETE INFORMATION.

**12. ECOLOGICAL INFORMATION**

**ENVIRONMENTAL FATE:** When released into the water this material is not expected to evaporate significantly. Methylene Blue has a bioconcentration factor (BCF) of less than 100. It is expected to significantly bioaccumulate.

**ENVIRONMENTAL TOXICITY:** No information found.

**13. DISPOSAL CONSIDERATIONS**

**DISPOSAL BY INCINERATION:** Keep in sealed containers between use and final disposal. Solution may be incinerated in a hazardous waste incinerator equipped with afterburner and scrubber. Waste disposal activities are subject to federal, state and local laws and regulations.

**14. TRANSPORTATION INFORMATION**

**DOT:** This material is not a hazardous material as defined by 49CFR 172.101 by the U.S. DOT.
**IATA:** Non-hazardous for air transport.

### 15. REGULATORY INFORMATION

**OSHA Hazards:** Irritant

#### CHEMICAL INVENTORY STATUS

<table>
<thead>
<tr>
<th>INGREDIENT</th>
<th>TSCA</th>
<th>EC</th>
<th>JAPAN</th>
<th>AUSTRALIA</th>
<th>KOREA DSL</th>
<th>NDSL</th>
<th>PHIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methylene Blue</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INGREDIENT</th>
<th>SARA 302</th>
<th>SARA 313</th>
<th>CERCLA</th>
<th>RCRA</th>
<th>TSCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methylene Blue</td>
<td>RQ</td>
<td>TPQ</td>
<td>List</td>
<td>Chem. Catg.</td>
<td>261.33</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

SARA 311/312  Acute: Yes; Chronic: No; Fire: No; Pressure: No; Reactivity: No

DSCL (EEC): R36/38- Irritating to eyes and skin.

### 16. OTHER INFORMATION

Reviewed by BW, MJ  
Creation date 9/01/94  
Revision date 3/01/14

Reason for Revision: Update to Globally Harmonized System of Chemical Classification.

This information is believed to be accurate and represents the information currently available to us. However, we make no warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes.