Dear Customer,

This File Contains Both The ANSI Material Safety Data Sheet and The GHS Safety Data Sheet For The Same Product

Spectrum is currently transitioning all chemical product labeling from the ANSI\(^1\) format to the GHS\(^2\) format (see note below). In order to ensure that you receive complete labeling during the transition, we have included both the ANSI MSDS and the GHS SDS in a single file. The ANSI MSDS is given first, followed by the GHS SDS. Please use whichever matches the container label.

Why It Matters:

The complete precautionary labeling for this chemical consists of BOTH the label on the container AND the matching Material Safety Data Sheet (for ANSI labels) or Safety Data Sheet (for GHS labels). Both elements of the labeling [Label + (M)SDS] are written to be read and understood together, so as to provide complete precautionary information. It is intended for you to read and understood BOTH before handling or using the chemical.

Picking the Right One: 2 Easy Ways To Tell Whether Your Container Has an ANSI Label or a GHS Label

1) GHS labels: Any pictogram displayed in the upper left-hand corner will be inside a red diamond. ANSI labels: pictograms, if present, will be inside individual black boxes.

2) GHS labels: on the bottom of the right-hand panel of the label, locate the Lot Number. Directly to the left will be a string of control characters, followed by a single letter. For GHS labels, the string of characters will end in "GHS:"

---

C\(_{9}\)H\(_{8}\)O\(_{2}\)

BE169

SIZ SY

Benzylic Benzoate

(Benzoic Acid
Phenylmethyl Ester)

U.S.P.

CAS 120-41-4

Preparation:

Caution: Not for food use. Not for personal use. Avoid contact with eyes, skin and clothing. Wash hands and clothing after exposure. Keep container closed at all times. Do not expose to heat, open flame, sparks, or other ignition sources. Avoid breathing vapor or mist. Avoid contact with eyes, skin and clothing. Wash hands thoroughly after handling.

For GHS compliance, please refer to: www.SpectrumChemical.com

SPECTRUM CHEMICAL MFG. CORP.

Corona, CA 92881 New Brunswick, NJ 08903

C O R P O R A T E  O F F I C E S
14422 South San Pedro Street
Gardena, California 90248
PHONE 310.516.8000
FAX 310.516.9843

A N I S O 9 0 0 1 : 2 0 0 8 R E G I S T E R E D  C O M P A N Y

www.spectrumchemical.com
Sincerely,

Regulatory Affairs
SAFETY DATA SHEET

Preparation Date: No data available  Revision Date: 05/14/2015  Revision Number:  G1

Product identifier

Product code: ME141
Product Name: METHYLENE BLUE, USP

Other means of identification

Synonyms: Basic Blue 9; 3,7-bis(Dimethylamino)phenothiazin-5-ium Chloride; Methylene Blue Trihydrate; Methylene Blue Chloride; Methylene Blue C.I. 52015
CAS #: 7220-79-3
RTECS #: SO5600000
Cl#: Not available

Recommended use of the chemical and restrictions on use

Recommended use: No information available.
Uses advised against: No information available

Supplier:
Spectrum Chemicals and Laboratory Products, Inc.
14422 South San Pedro St.
Gardena, CA  90248
(310) 516-8000

Order Online At: https://www.spectrumchemical.com

Emergency telephone number
Chemetrec 1-800-424-9300

Contact Person:
Martin LaBenz (West Coast)
Ibad Tirmiz (East Coast)

2. HAZARDS IDENTIFICATION

Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

<table>
<thead>
<tr>
<th>Hazard Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity - Oral</td>
<td>Category 4</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>Category 2</td>
</tr>
<tr>
<td>Serious eye damage/eye irritation</td>
<td>Category 2A</td>
</tr>
<tr>
<td>Specific target organ toxicity (single exposure)</td>
<td>Category 3</td>
</tr>
</tbody>
</table>

Label elements

Product code: ME141  Product name: METHYLENE BLUE, USP
Warning

Hazard statements
Harmful if swallowed
Causes skin irritation
Causes serious eye irritation
May cause respiratory irritation

Hazards not otherwise classified (HNOC)
Not Applicable

Other hazards
Not available

Precautionary Statements - Prevention
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Avoid breathing dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Wear protective gloves

Precautionary Statements - Response
Specific treatment (see .? on this label)
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
IF ON SKIN: Wash with plenty of soap and water
If skin irritation occurs: Get medical advice/attention
Take off contaminated clothing and wash before reuse
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
Rinse mouth

Precautionary Statements - Storage
Store in a well-ventilated place. Keep container tightly closed
Store locked up

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Weight %</th>
<th>Trade Secret</th>
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<tr>
<td>Methylene Blue</td>
<td>7220-79-3</td>
<td>100</td>
<td>*</td>
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</tbody>
</table>

4. FIRST AID MEASURES

Product code: ME141 Product name: METHYLENE BLUE, USP
4. FIRST AID MEASURES

First aid measures

General Advice: Poison information centers in each State capital city can provide additional assistance for scheduled poisons (13 1126)

Skin Contact: Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Get medical attention. If skin irritation persists, call a physician.

Eye Contact: Flush eye with water for 15 minutes. Get medical attention if irritation occurs. If symptoms persist, call a physician.

Inhalation: Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Obtain medical attention.

Most important symptoms and effects, both acute and delayed

Symptoms Causes serious eye irritation. Eye contact may result in redness or pain. Causes skin irritation. Skin contact may result in redness, pain, inflammation, itching, scaling. May cause irritation of respiratory tract. Harmful if swallowed.

Indication of any immediate medical attention and special treatment needed

Notes to Physician: Treat symptomatically

Protection of first-aiders

First-Aid Providers: Avoid exposure to blood or body fluids. Wear gloves and other necessary protective clothing. Dispose of contaminated clothing and equipment as bio-hazardous waste

5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media: Carbon dioxide (CO2). Dry chemical. Water spray mist or foam.

Unsuitable Extinguishing Media: No information available.

Specific hazards arising from the chemical

Hazardous Combustion Products: Carbon oxides, Nitrogen oxides, Sulfur oxides, Halogenated compounds

Specific hazards: May be combustible at high temperatures. Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard

Special Protective Actions for Firefighters

Specific Methods: No information available.

Special Protective Equipment for Firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear
6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions: Ensure adequate ventilation. Use personal protective equipment. Avoid contact with skin, eyes and clothing. Keep people away from and upwind of spill/leak. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Remove all sources of ignition.

Environmental precautions Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. Prevent entry into waterways, sewers, basements or confined areas.

Methods and material for containment and cleaning up

Methods for containment Stop leak if you can do it without risk. Cover with plastic sheet to prevent spreading.

Methods for cleaning up Sweep up and shovel into suitable containers for disposal. Clean contaminated surface thoroughly.

7. HANDLING AND STORAGE

Precautions for safe handling

Technical Measures/Precautions:
Provide sufficient air exchange and/or exhaust in work rooms. Keep away from incompatible materials.

Safe Handling Advice:
Wear personal protective equipment. Avoid contact with skin, eyes and clothing. Do not ingest. Do not breathe vapours/dust. Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Technical Measures/Storage Conditions:
Keep container tightly closed in a dry and well-ventilated place. Store at room temperature in the original container. Store away from incompatible materials.

Incompatible Materials:

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

National occupational exposure limits

United States

<table>
<thead>
<tr>
<th>Components</th>
<th>OSHA</th>
<th>NIOSH</th>
<th>ACGIH</th>
<th>AIHA WHEEL</th>
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Canada

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<tr>
<th>Components</th>
<th>Alberta</th>
<th>British Columbia</th>
<th>Ontario</th>
<th>Quebec</th>
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Australia and Mexico

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<th>Mexico</th>
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<tbody>
<tr>
<td>Methylene Blue 7220-79-3</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

Product code: ME141  Product name: METHYLENE BLUE, USP
Appropriate engineering controls

Engineering measures to reduce exposure: Ensure adequate ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Individual protection measures, such as personal protective equipment

Personal Protective Equipment

Eye protection: Safety glasses. Safety glasses with side-shields.
Skin and body protection: Chemical resistant apron. Gloves. Long sleeved clothing.
Respiratory protection: Effective dust mask. Wear respirator with dust filter.
Hygiene measures: Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. When using, do not eat, drink or smoke.

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Physical state:</th>
<th>Appearance:</th>
<th>Color:</th>
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<tr>
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<th>Taste</th>
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</table>

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<th>Molecular/Formula weight:</th>
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<tr>
<td></td>
<td>Soluble in cold water</td>
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<tr>
<td></td>
<td>Sparingly soluble in alcohol</td>
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</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

Reactivity

Product code: ME141
Product name: METHYLENE BLUE, USP
10. STABILITY AND REACTIVITY

Reactive with alkalis
Reactive with oxidizing agents
Reacts with reducing agents

Chemical stability
Stability: Stable under recommended storage conditions
Possibility of Hazardous Reactions: Hazardous polymerization does not occur

Other Information
Corrosivity: No information available
Special Remarks on Corrosivity: No information available

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure
Principal Routes of Exposure: Ingestion. Inhalation.
Acute Toxicity

Component Information

Methylene Blue - 7220-79-3
LD50/oral/rat = No information available
LD50/oral/mouse = No information available
LD50/dermal/rat = No information available
LD50/dermal/rabbit = No information available
LC50/inhalation/rat = No information available
LC50/inhalation/mouse = No information available
Other LD50 or LC50 information = 1180 mg/kg Oral LD50 Rat for Methylene Blue, anhydrous CAS 61-73-4

Product Information
LD50/oral/rat =
VALUE- Acute Tox Oral = No information available

LD50/oral/mouse =
Value - Acute Tox Oral = No information available

LD50/dermal/rabbit
VALUE-Acute Tox Dermal = No information available

LD50/dermal/rat
VALUE -Acute Tox Dermal = No information available
LC50/inhalation/rat
VALUE-Vapor = No information available
VALUE-Gas = No information available
VALUE-Dust/Mist = No information available

LC50/inhalation/mouse
VALUE-Vapor = No information available
VALUE-Gas = No information available
VALUE-Dust/Mist = No information available

Symptoms

Skin Contact: Causes skin irritation. It may color the skin a bluish color.

Eye Contact: Causes serious eye irritation. May cause corneal injury.

Inhalation
May cause respiratory tract irritation.

Ingestion
Harmful if swallowed. Ingestion of large doses may cause gastrointestinal tract irritation, burning sensation mouth, nausea, vomiting, diarrhea, abdominal pain. May affect blood (hemolytic anemia, hyperbilirubinemia, methemoglobinemia), metabolism (weight loss). Other symptoms of overdose may include anxiety, chest pain, confusion, dizziness, headache, unusual tiredness and weakness, severe sweating, tremors. Symptoms of Methemoglobinemia include cyanosis, headache, lethargy, dizziness, fatigue, syncope, dyspnea, central nervous system depression, seizures, arrhythmia, and shock.

Aspiration hazard
No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Chronic Toxicity
No information available

Sensitization:
No information available

Mutagenic Effects:
Experiments with bacteria and/or yeast have shown mutagenic effects
May affect genetic material

Carcinogenic effects:
Not considered carcinogenic

<table>
<thead>
<tr>
<th>Components</th>
<th>ACGIH - Carcinogens</th>
<th>IARC</th>
<th>NTP</th>
<th>OSHA HCS - Carcinogens</th>
<th>Australia - Prohibited Carcinogenic Substances</th>
<th>Australia - Notifiable Carcinogenic Substances</th>
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<tbody>
<tr>
<td>Methylene Blue</td>
<td>Not listed</td>
<td>Monograph 108 (in preparation) Methylene blue</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
</tbody>
</table>

Reproductive toxicity
No data is available

Reproductive Effects: May cause adverse reproductive effects based on animal data.
Developmental Effects: No information available

Product code: ME141          Product name: METHYLENE BLUE, USP
Teratogenic Effects:
It has not been found to be teratogenic in rats. In mice, at high doses via subcutaneous injection, gestational exposure to methylene blue increased the incidence of preterm delivery, fetal death and skeletal anomalies, and exencephaly. No human data found. Methylene Blue is used as a color marker on skin, in tissue or amniotic fluid. It may be teratogenic via intraamniotic injection.

Specific Target Organ Toxicity
STOT - single exposure: No information available
STOT - repeated exposure: No information available
Target Organs: No information available

12. ECOLOGICAL INFORMATION

Ecotoxicity
Ecotoxicity effects: No data available.
Persistence and degradability: No information available
Bioaccumulative potential: No information available
Mobility: No information available

13. DISPOSAL CONSIDERATIONS

Disposal Methods
Waste from residues / unused products:
Waste must be disposed of in accordance with Federal, State and Local regulation.
Contaminated packaging:
Empty containers should be taken for local recycling, recovery or waste disposal.

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<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Methylene Blue</td>
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<td>None</td>
<td>None</td>
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14. TRANSPORT INFORMATION

DOT
UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Risk: No information available
Packing Group: None
ERG No: No information available
Marine Pollutant: No data available
DOT RQ (lbs): No information available

TDG (Canada)
UN-No: Not Regulated

Product code: ME141
Product name: METHYLENE BLUE, USP
<table>
<thead>
<tr>
<th>14. TRANSPORT INFORMATION</th>
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<tbody>
<tr>
<td>Proper Shipping Name: No information available</td>
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<td>Subsidiary Risk: No information available</td>
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ADR

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<td>CEFIC Tremcard No: No information available</td>
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IMO / IMDG

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<td>Marine Pollutant: No information available</td>
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<td>MFAG: No information available</td>
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<td>Maximum Quantity: No information available</td>
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RID

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ICAO

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<table>
<thead>
<tr>
<th>15. REGULATORY INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>International Inventories</td>
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</table>

Product code: ME141  
Product name: METHYLENE BLUE, USP
### Components

<table>
<thead>
<tr>
<th>Components</th>
<th>U.S. TSCA</th>
<th>KOREA KECL</th>
<th>Philippines (PICCS)</th>
<th>Japan ENCS</th>
<th>CHINA</th>
<th>Australia (AICS)</th>
<th>EINECS-No.</th>
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<tbody>
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<td>Not present</td>
<td>Not present</td>
<td>Not present</td>
<td>Not present</td>
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### U.S. Regulations

**California Prop. 65: Safe Drinking Water and Toxic Enforcement Act of 1986.**

**Chemicals Known to the State of California to Cause Cancer:**
This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

**Chemicals Known to the State of California to Cause Reproductive Toxicity:**
This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

<table>
<thead>
<tr>
<th>Components</th>
<th>Carcinogen</th>
<th>Developmental Toxicity</th>
<th>Male Reproductive Toxicity</th>
<th>Female Reproductive Toxicity</th>
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<td>Methylene Blue</td>
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### CERCLA/SARA

<table>
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<tr>
<th>Components</th>
<th>CERCLA - Hazardous Substances and their Reportable Quantities</th>
<th>Section 302 Extremely Hazardous Substances and TPQs</th>
<th>Section 302 Extremely Hazardous Substances and RQs</th>
<th>Section 313 - Chemical Category</th>
<th>Section 313 - Reporting de minimis</th>
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### U.S. TSCA

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<th>Components</th>
<th>TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS)</th>
<th>TSCA 8(d) - Health and Safety Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methylene Blue</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>

### Canada

**WHMIS hazard class:**
Non-controlled

**Canada Controlled Products Regulation:**
This product has been classified according to the hazard criteria of the CPR (Controlled Products Regulation) and the MSDS contains all of the information required by the CPR.

### Inventory

<table>
<thead>
<tr>
<th>Components</th>
<th>Canada (DSL)</th>
<th>Canada (NDSL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methylene Blue</td>
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<td>Not Listed</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Components</th>
<th>CEPA Schedule I - Toxic Substances</th>
<th>CEPA - 2010 Greenhouse Gases Subject to Mandatory Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methylene Blue</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
</tbody>
</table>

### EU Classification

**R-phrase(s)**
R22 - Harmful if swallowed.

**Product code:** ME141  
**Product name:** METHYLENE BLUE, USP
S -phrase(s)
S46 - If swallowed, seek medical advice immediately and show this container or label.

<table>
<thead>
<tr>
<th>Components</th>
<th>Classification</th>
<th>Concentration Limits:</th>
<th>Safety Phrases</th>
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</thead>
<tbody>
<tr>
<td>Methylene Blue</td>
<td></td>
<td>No information</td>
<td></td>
</tr>
</tbody>
</table>

The product is classified in accordance with Annex VI to Directive 67/548/EEC

Indication of danger:
T - Toxic

16. OTHER INFORMATION

Revision Date: 05/14/2015
Prepared by: Sonia Owen

Disclaimer:
All chemicals may pose unknown hazards and should be used with caution. This Safety Data Sheet (SDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this SDS. The physical properties reported in this SDS are obtained from the literature and do not constitute product specifications. Information contained herein does not constitute a warranty, whether expressed or implied, as to the safety, merchantability or fitness of the goods for a particular purpose. Spectrum Chemicals & Laboratory Products, Inc. assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this SDS is based on technical data judged to be reliable, Spectrum assumes no responsibility for the completeness or accuracy of the information contained herein.

End of Safety Data Sheet
**Material Safety Data Sheet**

<table>
<thead>
<tr>
<th>NFPA</th>
<th>HMIS</th>
<th>Personal Protective Equipment</th>
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</thead>
<tbody>
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<td>1</td>
<td>1</td>
<td>See Section 15.</td>
</tr>
<tr>
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### Section 1. Chemical Product and Company Identification

<table>
<thead>
<tr>
<th>Common Name/Trade Name</th>
<th>Catalog Number(s).</th>
<th>CAS#</th>
<th>RTECS</th>
<th>TSCA</th>
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</thead>
<tbody>
<tr>
<td>Methylene Blue</td>
<td>YY956, YY1087, YY1150, M2553, ME140, ME145, ME141</td>
<td>7220-79-3; 61-73-4</td>
<td>SO560000</td>
<td>TSCA 8(b) inventory: No products were found. This substance is not listed on the TSCA 8(b) Inventory since it is a hydrate. However, the anhydrous form (CAS no. 61-73-4) is listed on the TSCA 8(b) Inventory.</td>
</tr>
</tbody>
</table>

Manufacturer: SPECTRUM LABORATORY PRODUCTS INC. 14422 S. SAN PEDRO STREET GARDENA, CA 90248

Commercial Name(s): Not available.

Synonym: Basic Blue 9; 3,7-bis(Dimethylamino)phenothiazin-5-iium Chloride; Methylene Blue Trihydrate; Methylene Blue Chloride; Methylene Blue C.I. 52015.

Chemical Name: Methylene Blue trihydrate

Chemical Family: Not available.

Chemical Formula: C16-H18-N3-S-Cl.3H2O

Supplier: SPECTRUM LABORATORY PRODUCTS INC. 14422 S. SAN PEDRO STREET GARDENA, CA 90248

### Section 2. Composition and Information on Ingredients

#### Exposure Limits

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>TWA (mg/m³)</th>
<th>STEL (mg/m³)</th>
<th>CEIL (mg/m³)</th>
<th>% by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Methylene Blue trihydrate</td>
<td>7220-79-3</td>
<td></td>
<td></td>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>

Toxicological Data on Ingredients:
- LD50: Not available.
- LC50: Not available.
### Section 3. Hazards Identification

| Potential Acute Health Effects | Hazardous in case of eye contact (irritant). Slightly hazardous in case of skin contact (irritant), of ingestion, of inhalation. |
| Potential Chronic Health Effects | **CARCINOGENIC EFFECTS**: Not available.  
**MUTAGENIC EFFECTS**: Mutagenic for bacteria and/or yeast.  
**TERATOGENIC EFFECTS**: Not available.  
**DEVELOPMENTAL TOXICITY**: Not available.  
Repeated or prolonged exposure is not known to aggravate medical condition. |

### Section 4. First Aid Measures

| Eye Contact | Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention. |
| Skin Contact | Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops. Cold water may be used. |
| Serious Skin Contact | Not available. |
| Inhalation | If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention. |
| Serious Inhalation | Not available. |
| Ingestion | Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband. |
| Serious Ingestion | Not available. |

### Section 5. Fire and Explosion Data

| Flammability of the Product | May be combustible at high temperature. |
| Auto-Ignition Temperature | Not available. |
| Flash Points | Not available. |
| Flammable Limits | Not available. |
| Products of Combustion | These products are carbon oxides (CO, CO2), nitrogen oxides (NO, NO2...), sulfur oxides (SO2, SO3...), halogenated compounds. |
| Fire Hazards in Presence of Various Substances | Slightly flammable to flammable in presence of open flames and sparks, of heat. Non-flammable in presence of shocks. |
| Explosion Hazards in Presence of Various Substances | Risks of explosion of the product in presence of mechanical impact: Not available. Slightly explosive in presence of open flames and sparks. |
| Fire Fighting Media and Instructions | SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet. |
| Special Remarks on Fire Hazards | Not available. |
| Special Remarks on Explosion Hazards | Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard. |
Section 6. Accidental Release Measures

Small Spill
Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Large Spill
Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

Section 7. Handling and Storage

Precautions
Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe dust. Avoid contact with eyes. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents, reducing agents, alkalis.

Storage
Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8. Exposure Controls/Personal Protection

Engineering Controls
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection
Splash goggles. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill
Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits
Not available.

Section 9. Physical and Chemical Properties

Physical state and appearance
Solid. (Crystals solid. Powdered solid.)

Molecular Weight
373.9 g/mole

pH (1% soln/water)
Not available.

Boiling Point
Not available.

Melting Point
190°C (374°F)

Critical Temperature
Not available.

Specific Gravity
Not available.

Vapor Pressure
Not applicable.

Vapor Density
Not available.

Volatility
Not available.

Odor Threshold
Not available.

Water/Oil Dist. Coeff.
Not available.

Ionicity (in Water)
Not available.

Dispersion Properties
See solubility in water.

Solubility
Soluble in cold water. Soluble in chloroform. Sparingly soluble in alcohol.
Section 10. Stability and Reactivity Data

<table>
<thead>
<tr>
<th>Stability</th>
<th>The product is stable.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instability Temperature</td>
<td>Not available.</td>
</tr>
<tr>
<td>Conditions of Instability</td>
<td>Excess heat, light, incompatible materials</td>
</tr>
<tr>
<td>Incompatibility with various substances</td>
<td>Reactive with oxidizing agents, reducing agents, alkalis.</td>
</tr>
<tr>
<td>Corrosivity</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

Special Remarks on Reactivity
- Light Sensitive.
- Also incompatible with caustic alkali, dichromates, alkali iodides.

Special Remarks on Corrosivity
- Not available.

Polymerization
- Will not occur.

Section 11. Toxicological Information

Routes of Entry
- Inhalation. Ingestion.

Toxicity to Animals
- Methylene Blue [anhydrous; CAS no. 61-73-4]:
  - Acute oral toxicity (LD50): 1180 mg/kg [Rat].

Chronic Effects on Humans
- MUTAGENIC EFFECTS: Mutagenic for bacteria and/or yeast.

Other Toxic Effects on Humans
- Slightly hazardous in case of skin contact (irritant), of ingestion, of inhalation.

Special Remarks on Toxicity to Animals
- Not available.

Special Remarks on Chronic Effects on Humans
- May cause adverse reproductive effects (female fertility - post implantation mortality) based on animal data. It has not been found to be teratogenic in rats. In mice, at high doses via subcutaneous injection, gestational exposure to methylene blue increased the incidence of preterm delivery, fetal death and skeletal anomalies, and exencephaly. No human data found.

- May affect genetic material (mutagenic).
- Methylene Blue is used as as color marker on skin , in tissue or amniotic fluid. It may be teratogenic via intraamniotic injection.

Special Remarks on other Toxic Effects on Humans
- Acute Potential Health Effects:
  - Skin: May cause skin irritation. It may color the skin a bluish color.
  - Eyes: Dust causes eye irritation. It may cause corneal and conjunctival injury.
  - Inhalation: Dust may cause respiratory tract irritation. No expected health hazard via inhalation during normal industrial handling.
  - Ingestion: May be harmful if swallowed. Ingestion of large doses may cause gastrointestinal tract irritation, burning sensation mouth, nausea, vomiting, diarrhea, abdominal pain. May affect blood (hemolytic anemia, hyperbilirubinemia, methemoglobinemia), metabolism (weight loss). Other symptoms of overdose may include anxiety, chest pain, confusion, dizziness, headache, unusual tiredness and weakness, severe sweating, tremors. Symptoms of Methemoglobinemia include cyanosis, headache, lethargy, dizziness, fatigue, syncope, dyspnea, central nervous system depression, seizures, arrhythmia, and shock.

Section 12. Ecological Information

Ecotoxicity
- Not available.

BOD5 and COD
- Not available.

Products of Biodegradation
- Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation
- The products of degradation are as toxic as the product itself.

Special Remarks on the Products of Biodegradation
- Not available.

Continued on Next Page
Section 13. Disposal Considerations

Waste Disposal
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14. Transport Information

DOT Classification
Not a DOT controlled material (United States).

Identification
Not applicable.

Special Provisions for Transport
Not applicable.

DOT (Pictograms)

Section 15. Other Regulatory Information and Pictograms

Federal and State Regulations
CAS no. 7220-79-3 [trihydrate] is not TSCA listed.
CAS no. 61-73-4 [anhydrous] is TSCA listed.

California Proposition 65 Warnings
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: No products were found.
California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: No products were found.

Other Regulations
EINECS: This product is not on the European Inventory of Existing Commercial Chemical Substances.
Canada: Not listed on Canadian Domestic Substance List (DSL) or Canadian Non-Domestic Substance List (NDSL).
China: Not listed on National Inventory.
Japan: Not listed on National Inventory (ENCS).
Korea: Not listed on National Inventory (KECI).
Philippines: Not listed on National Inventory (PICCS).
Australia: Not listed on AICS.

Other Classifications
WHMIS (Canada) Not controlled under WHMIS (Canada).
DSCL (EEC) R22- Harmful if swallowed. S46- If swallowed, seek medical advice immediately and show this container or label.

HMIS (U.S.A.)

<table>
<thead>
<tr>
<th>Health Hazard</th>
<th>Fire Hazard</th>
<th>Reactivity</th>
<th>Personal Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>0</td>
<td>E</td>
</tr>
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</table>

National Fire Protection Association (U.S.A.)

<table>
<thead>
<tr>
<th>Health</th>
<th>Reactivity</th>
<th>Specific Hazard</th>
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</thead>
<tbody>
<tr>
<td>1</td>
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</tr>
</tbody>
</table>

WHMIS (Canada) (Pictograms)

DSCL (Europe) (Pictograms)
Methylene Blue

Protective Equipment
- Gloves
- Lab coat
- Dust respirator. Be sure to use an approved/certified respirator or equivalent
- Splash goggles

Section 16. Other Information

<table>
<thead>
<tr>
<th>MSDS Code</th>
<th>M3855</th>
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</thead>
<tbody>
<tr>
<td>References</td>
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<td>Other Special Considerations</td>
<td>Not available.</td>
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</tbody>
</table>

Validated by Sonia Owen on 2/20/2013.  
Verified by Sonia Owen.
Printed 2/20/2013.

CALL (310) 516-8000

Notice to Reader
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