

## Safety Data Sheet

### 1. IDENTIFICATION

**Product Identifier:** Loeffler's Methylene Blue

**Product Code(s):** L1002

**Synonyms:** Mixture.

**Recommended Use:** For manufacturing, industrial, and laboratory use only. Use as a laboratory reagent.

**Uses Advised Against:** Not for food, drug, or household use.

**Supplier:** Rocky Mountain Reagents, Inc.  
4621 Technology Drive, Golden, CO 80403  
Phone: (303) 762-0800 Fax: (303) 762-1240

**Emergency Phone Number:** (800) 255-3924 (VelocityEHS)

### 2. HAZARDS IDENTIFICATION

**Hazard Classifications:** Eye Damage/Irritation: Category 2A  
Flammable Liquids: Category 3

**Signal Word:** WARNING

**Hazard Statements:** Causes serious eye irritation.  
Flammable liquid and vapor.

**Pictograms:**



**Precautionary Statements:**

**Prevention:** Wash thoroughly after handling.  
Wear protective gloves, eye protection, and face protection.  
Keep away from heat, sparks, open flames, and hot surfaces. – No smoking.  
Keep container tightly closed.  
Ground or bond container and receiving equipment.  
Use explosion-proof electrical, ventilating, lighting, and transportation equipment.  
Use only non-sparking tools.  
Take precautionary measures against static discharge.

**Response:** 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 attention. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water. In case of fire: Use water spray, dry powder, alcohol resistant foam, or carbon dioxide to extinguish.

**Storage:** Store in a well-ventilated place.  
Keep cool.

**Disposal:** Dispose of contents and container in accordance with local, regional, national, and international regulations.

**Hazards Not Otherwise Classified:** Not applicable.

**Toxicity Statement:** This product consists of no greater than 1% ingredients whose acute toxicities are unknown.

### 3. COMPOSITION AND INFORMATION ON INGREDIENTS

Component	Common Name / Synonyms	CAS#	Chemical Formula	% by Weight
Water	Water	7732-18-5	H <sub>2</sub> O	80.4972
Methylene Blue, Trihydrate	Basic Blue 9	7220-79-3	C <sub>16</sub> H <sub>18</sub> N <sub>3</sub> SCl • 3H <sub>2</sub> O	0.4024
Potassium Hydroxide	Caustic Potash	1310-58-3	KOH	0.0045
Ethanol	Ethyl Alcohol	64-17-5	C <sub>2</sub> H <sub>5</sub> OH	17.2818
Methanol	Methyl Alcohol	67-56-1	CH <sub>3</sub> OH	0.8593
Isopropanol	Isopropyl Alcohol	67-63-0	C <sub>3</sub> H <sub>7</sub> OH	0.9548

**Trade Secret Statement:** Not applicable.

### 4. FIRST AID MEASURES

#### First Aid Procedures:

**Inhalation:** Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. WARNING! It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled or ingested material is toxic, infectious, or corrosive. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a on-way valve or other proper respiratory medical device. Call a physician if symptoms occur.

**Ingestion:** Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, keep head low so that vomit does not enter lungs. Never give anything by mouth to an unconscious person. Call a physician or poison control center if symptoms occur.

**Skin Contact:** Immediately remove contaminated clothing and shoes. Wash skin with soap and plenty of water for at least 15 minutes. Wash clothing before reuse. Call a physician if symptoms occur.

**Eye Contact:** Immediately flush eyes with gentle but large stream of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Check for and remove contact lenses if present and easy to do. Continue rinsing. Call a physician if symptoms persist.

**General Advice:** Poison information centers in each state can provide additional assistance for scheduled poisons. Ensure that medical personnel and those providing first aid are aware of the material(s) involved and take precautions to protect themselves.

<b>Symptoms and Effects:</b>	Causes serious eye irritation. May cause irritation, unconsciousness, visual disturbances, drowsiness, dizziness, skin dryness, skin redness, burning, coughing, sneezing, choking sensation, hoarseness, difficulty breathing, shock, nausea, vomiting, diarrhea, abdominal pain, constipation, decreased motor function, and blindness. Inhalation of vapors may cause drowsiness, dizziness, suffocation, shortness of breath, nervous system effects, and cardiovascular effects. Absorption through skin may cause visual disturbances, metabolic acidosis, drowsiness, or dizziness. May color skin a bluish color. May cause corneal and conjunctiva injury. May cause burns to the eyes, skin, respiratory tract, and gastrointestinal tract. May cause tissue damage. May affect the respiratory system and mucous membranes. Prolonged or repeated exposure may cause tissue destruction, mutagenic effects, adverse reproductive effects, dermatitis, and liver, kidney, and central nervous system effects. Large doses may cause gastrointestinal tract irritation, burning sensation in mouth, nausea, vomiting, diarrhea, and abdominal pain. Absorption into the body leads to the formation of methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours or longer. Symptoms include: headache, lethargy, dizziness, fatigue, syncope, dyspnea, central nervous system depression, seizures, arrhythmia, and shock.
<b>Immediate Medical Care/ Special Treatment:</b>	If you feel unwell or are concerned, get medical attention. Treat symptomatically. Symptoms may be delayed.

## 5. FIREFIGHTING MEASURES

**Suitable Extinguishing Media:** Water spray, dry powder, alcohol resistant foam, carbon dioxide.

**Unsuitable Extinguishing Media:** Do not use a solid (straight) water stream, as it may scatter and spread fire.

**Hazardous Combustion Products:** Carbon oxides, nitrogen oxides, sulfur oxides, hydrogen chloride, potassium oxides, hydrogen.

**Specific Hazards:** Flammable. Vapors may cause flash fire or ignite explosively. Burns vigorously if ignited easily by heat, sparks, or flames. Material may burn with an invisible flame. Sealed containers may explode when heated or involved in fire. Material is sensitive to static discharge. Vapors may travel considerable distance to source of ignition and flash back. Vapor from the solvent may accumulate in container headspace resulting in flammability hazard. Excessive thermal conditions may cause decomposition and yield corrosive and/or toxic fumes.

**Special Protective Equipment/  
Precautions for Firefighters:** As in any fire, wear MSHA/NIOSH-approved (or equivalent), self-contained, positive-pressure or pressure-demand breathing apparatus and full protective gear. Use water spray to cool unopened containers. Move containers from fire area, if you can do so without risk. This material may evaporate if spilled and leave a flammable residue. In the event of fire and/or explosion, do not breathe fumes.

## 6. ACCIDENTAL RELEASE MEASURES

**Personal Precautions and Protective Equipment:** Ventilate area of leak or spill. Isolate hazard area and keep unnecessary and unprotected personnel away from the area of leak or spill. Keep upwind. Keep out of low areas. Wear appropriate personal protective equipment (see Section 8). Remove all sources of ignition. Pay attention to flashback. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use spark-proof tools and explosion-proof equipment. Avoid contact with eyes, skin, and clothing.

**Emergency Procedures:** In case of chemical emergency, or if unsure how to address an accidental release, consult a professional (see Section 1).

**Methods for Containment:** Eliminate all sources of ignition. Stop the flow of material, if this is without risk. Prevent entry into waterways, sewer, basements, or confined areas. Dike the spilled material, where this is possible. Product should not be released to the environment. Contain and recover liquid when possible.

**Methods for Cleanup:** Absorb spill with an inert material (e.g. vermiculite, dry sand, earth, cloth, or fleece) and place in a non-combustible container for reclamation or disposal. Do not flush to sewer. Clean contaminated surface thoroughly. Spills can be diluted with water. Never return spills in original containers for reuse. Clean up in accordance with all applicable regulations.

## 7. HANDLING AND STORAGE

**Handling:** Do not handle, store, or open near an open flame, sources of heat, or sources of ignition. Wear personal protective equipment (see Section 8). Use only in well-ventilated areas. Provide sufficient air exchange and/or exhaust in work areas. Avoid contact with skin, eyes, and clothing. Limit exposure to air. Do not breathe vapors or spray mist. Do not ingest. When using, do not eat, drink, or smoke. Take precautionary measures against static discharge. To avoid ignition of vapors by static electricity discharge, all metal parts of equipment must be grounded. Keep away from incompatible materials (see Section 10). Handle in accordance with good industrial hygiene and safety practice. Wash thoroughly after handling. Containers of this material may be hazardous when empty, as they retain product residues. Observe all warnings and precautions listed for this product.

**Storage:** Store in a cool, dry, ventilated area. Store in a segregated and approved area away from heat and incompatible materials (see Section 10). Store in original container. Do not store in metallic containers. Keep containers tightly closed and upright. Keep away from food, drink, and animal foodstuffs. Keep out of the reach of children. Ground container and transfer equipment. Comply with all national, state, and local codes pertaining to the storage, handling, dispensing, and disposal of this product.

## 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

<b>Exposure Limits:</b>	Water:	No information found.
	Methylene Blue, Trihydrate:	No information found.
	Potassium Hydroxide:	OSHA: PEL: 2 mg/m <sup>3</sup> ACGIH: TLV: 2 mg/m <sup>3</sup>
	Ethanol:	ACGIH: STEL: 1000 ppm OSHA: PEL: 1000 ppm 1900 mg/m <sup>3</sup> NISOH: TWA: 1000 ppm 1900 mg/m <sup>3</sup>
	Methanol:	ACGIH: TWA: 200 ppm STEL: 250 ppm BEL: 15 mg/L OSHA: PEL: 200 ppm 260 mg/m <sup>3</sup>

Isopropanol:	ACGIH: TWA:	200 ppm
	STEL:	400 ppm
	OSHA: PEL:	400 ppm
		980 mg/m <sup>3</sup>
	NIOSH: REL:	400 ppm
	STEL:	500 ppm

**Engineering Controls:** Ensure adequate ventilation. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

**Personal Protective Measures:**

**Eye/Face Protection:** Wear safety glasses with side shields or goggles and a face shield. Maintain approved eye wash station and accessible rinse facilities in work area.

**Skin Protection:** Wear appropriate chemical resistant clothing (with long sleeves) and appropriate chemical resistant gloves.

**Respiratory Protection:** An air-purifying, NIOSH-approved respirator with appropriate cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Use a positive-pressure, air-supplied respirator if there is any potential for an uncontrolled release, if exposure levels are unknown, or in any other circumstances where air-purifying respirators may not provide adequate protection.

**Specific Requirements for Personal Protective Equipment:** Ensure that glove material is compatible with this product. This information is available from glove manufacturers. If respiratory protection is required, use full face protection as well.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

*Unless otherwise indicated, all properties are given at 25 °C and standard pressure.*

<b>Appearance:</b>	Blue, opaque liquid.
<b>Odor:</b>	No information found.
<b>Odor Threshold:</b>	No information found.
<b>Formula Weight:</b>	Mixture.
<b>pH:</b>	No information found.
<b>Melting/Freezing Point:</b>	No information found.
<b>Boiling Point/Range:</b>	No information found.
<b>Decomposition Temperature:</b>	No information found.
<b>Flash Point:</b>	Not applicable.
<b>Auto-ignition Temperature:</b>	Not applicable.
<b>Flammability:</b>	Not flammable.
<b>Flammability/Explosive Limits:</b>	Not applicable.
<b>Solubility:</b>	Miscible with water.
<b>Vapor Pressure:</b>	No information found.
<b>Vapor Density:</b>	No information found.
<b>Specific Gravity:</b>	No information found.

<b>Evaporation Rate:</b>	No information found.
<b>Viscosity:</b>	No information found.
<b>Partition Coefficient (n-octanol/water):</b>	No information found.

## 10. STABILITY AND REACTIVITY

<b>Reactivity Data:</b>	Flammable liquid and vapor. See Section 9.
<b>Chemical Stability:</b>	Stable under normal conditions. Sensitive to air. Hygroscopic.
<b>Conditions to Avoid:</b>	Heat, flames, sparks, sources of ignition, excessive ambient moisture, exposure to air, incompatible materials.
<b>Incompatible Materials:</b>	Oxidizers, acids, bases, metals, halogens, azides, anhydrides, organic materials, phosphorous, nitromethane, reducing agents, isocyanates, inorganic salts, inorganic hydrides, hydrazine, ammonia.
<b>Hazardous Decomposition Products:</b>	Carbon oxides, nitrogen oxides, sulfur oxides, hydrogen chloride, potassium oxides, hydrogen.
<b>Possibility of Hazardous Reactions:</b>	May react vigorously or violently if exposed to extreme thermal conditions or in contact with the incompatible materials listed above. Excessive thermal conditions may yield hazardous decomposition products listed above. Contact with metals may yield hazardous hydrogen gas. Contact with moisture may cause violent exothermic reaction.
<b>Hazardous Polymerization:</b>	Will not occur.

## 11. TOXICOLOGICAL INFORMATION

<b>Routes of Exposure:</b>	Inhalation, ingestion, skin contact, eye contact.						
<b>Acute Effects:</b>	Causes serious eye irritation. May cause irritation to skin, respiratory tract, and gastrointestinal tract. May color skin a bluish color. May cause corneal and conjunctiva injury if exposed to eyes. May cause tissue damage. May cause visual disturbances or blindness if absorbed into the blood stream. May cause drowsiness or dizziness if inhaled, ingested, or absorbed into the blood stream. May affect the blood, brain, urinary system, liver, spleen, eyes, kidneys, cardiovascular system, pancreas, respiratory system and mucous membranes. Ingestion of large doses may cause gastrointestinal tract irritation, burning sensation in mouth, nausea, vomiting, diarrhea, and abdominal pain.						
<b>Chronic Effects:</b>	May cause central nervous system effects. May cause damage to eyesight. Absorption into the body leads to the formation of methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours or longer. Prolonged or repeated exposure may cause tissue destruction, liver, kidney, brain, cardiovascular system, blood, spleen, and heart damage as well as adverse reproductive effects, birth defects, mutagenic effects, central nervous system effects, and dermatitis.						
<b>Toxicological Data:</b>	<table> <tr> <td>Water:</td> <td>Not applicable.</td> </tr> <tr> <td>Methylene Blue, Trihydrate:</td> <td>Irritating to skin and eyes based on animal data.</td> </tr> <tr> <td>Potassium Hydroxide:</td> <td>LD<sub>50</sub> Oral, Rat: 273 mg/kg Causes severe burns to eyes and skin based on animal data.</td> </tr> </table>	Water:	Not applicable.	Methylene Blue, Trihydrate:	Irritating to skin and eyes based on animal data.	Potassium Hydroxide:	LD <sub>50</sub> Oral, Rat: 273 mg/kg Causes severe burns to eyes and skin based on animal data.
Water:	Not applicable.						
Methylene Blue, Trihydrate:	Irritating to skin and eyes based on animal data.						
Potassium Hydroxide:	LD <sub>50</sub> Oral, Rat: 273 mg/kg Causes severe burns to eyes and skin based on animal data.						

Ethanol:	LD <sub>50</sub> Oral, Rat:	7060 mg/kg
	LC <sub>50</sub> Inhalation, Rat:	124.7 mg/L, 4 h
	Causes moderate eye irritation based on animal data.	
Methanol:	LD <sub>50</sub> Oral, Rat:	5628 mg/kg
	LC <sub>50</sub> Inhalation, Rat:	87.6 mg/L, 6 h
	LD <sub>50</sub> Dermal, Rabbit:	15800 mg/kg
	LD <sub>Lo</sub> Oral, Human:	143 mg/kg
	Toxic to reproduction based on animal data.	
Isopropanol:	LD <sub>50</sub> Oral, Rat:	5045 mg/kg
	LD <sub>50</sub> Dermal, Rabbit:	12800 mg/kg
	LC <sub>50</sub> Inhalation, Rat:	72.6 mg/L, 4 h
	Causes mild skin irritation based on animal data.	
	Causes moderate eye irritation based on animal data.	

**Symptoms of Exposure:** Irritation, skin being colored bluish, coughing, burning sensation in mouth, nausea, vomiting, diarrhea, abdominal pain, burning, sneezing, choking sensation, hoarseness, difficulty breathing, shock, unconsciousness, visual disturbances, metabolic acidosis, drowsiness, dizziness, suffocation, shortness of breath, nervous system effects, cardiovascular effects, constipation, blindness, respiration effects, skin dryness, and skin redness. Cyanosis symptoms include: headache, lethargy, dizziness, fatigue, syncope, dyspnea, central nervous system depression, seizures, arrhythmia, and shock.

**Carcinogenic Effects:** No component of this product is considered to cause cancer by IARC, ACGIH, NTP, or OSHA.

**ACGIH:** Isopropanol: A4 – Not classifiable as a human carcinogen.

**IARC:** Methylene Blue, Trihydrate: Group 3 - Not classifiable as to its carcinogenicity to humans.

Isopropanol: Group 3 – Not classifiable as to its carcinogenicity to humans.

## 12. ECOLOGICAL INFORMATION

<b>Ecotoxicological Data:</b>	Water:	Not applicable.
	Methylene Blue, Trihydrate:	No information found.
	Potassium Hydroxide:	
	LC <sub>50</sub> Western Mosquitofish ( <i>Gambusia affinis</i> ):	80 mg/L, 96 h
	Ethanol:	
	EC <sub>50</sub> Water Flea ( <i>Daphnia magna</i> ):	7.7 mg/L, 48 h
	LC <sub>50</sub> Fathead Minnow ( <i>Pimephales promelas</i> ):	> 100 mg/L, 96 h
	Methanol:	
	EC <sub>50</sub> Water Flea ( <i>Daphnia magna</i> ):	> 10000 mg/L, 48 h
	LC <sub>50</sub> Fathead Minnow ( <i>Pimephales promelas</i> ):	> 100 mg/L, 96 h
	Isopropanol:	
	LC <sub>50</sub> Western Mosquitofish ( <i>Gambusia affinis</i> ):	> 1400 mg/L, 96 h
	LC <sub>50</sub> Fathead Minnow ( <i>Pimephales promelas</i> ):	9640 mg/L, 96 h

**Persistence and Degradability:** Bioconcentration Factor: Methanol: 1.0  
Bioaccumulation Factor: Isopropanol: 3.16

**Environmental Effects:** Harmful to aquatic organisms. May adversely affect pH of aquatic ecosystems. Avoid exposure to the environment.  
Partition Coefficient (n-octanol/water): Methanol: -0.77

### 13. DISPOSAL INFORMATION

**Disposal Instructions:** All wastes must be handled in accordance with local, state, and federal regulations. Minimize exposure to product waste (see Section 8). Do not dispose unused waste down drains or into sewers.

**Contaminated Packaging:** Because emptied containers retain product residue, follow label warnings even after container is emptied. Offer rinsed packaging material to local recycling facilities.

**Waste Codes:** Potassium Hydroxide: D002: Waste Corrosive Material (pH ≤ 2 or pH ≥ 12.5 or corrosive to steel)  
Methanol: U154: US RCRA Hazardous Waste U List – Ignitable Waste  
Isopropanol: D001: Waste flammable material (with a flash point < 140 °F)

### 14. TRANSPORT INFORMATION

**DOT:**

**UN Number:** UN1987

**Proper Shipping Name:** Alcohols, n.o.s. (Denatured ethanol)

**Hazard Class:** 3

**Packing Group:** III

**ERG Number:** 127

**Environmental Hazard Regulations:** No information found.

**Other Transport Precautions:** DOT Reportable Quantity: Potassium Hydroxide: 1000 lb  
Methanol: 5000 lb

### 15. REGULATORY INFORMATION

**U.S. Federal Regulations:**

**OSHA:** This product is considered a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

**TSCA Inventory:** All components of this product are on the U.S. TSCA Inventory.

**U.S. EPCRA (SARA Title III):**

**Section 302:** No information found.



**Sections 311/312:**

Hazard Category	List (Yes/No)
Section 311 – Hazardous Chemical	Yes
Immediate Hazard	Yes
Delayed Hazard	No
Fire Hazard	Yes
Pressure Hazard	No
Reactivity Hazard	No

**Section 313:**

Isopropanol: De Minimis Concentration: 1.0%

**CERCLA Reportable Quantities:** Potassium Hydroxide: 1000 lb  
Methanol: 5000 lb  
Isopropanol: 100 lb

**International Inventories:**

Country or Region	Inventory Name	On Inventory (Yes/No)*
Australia	Australian Inventory of Chemical Substances (AICS)	No
Canada	Domestic Substances List (DSL)	No
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	No
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	No
New Zealand	New Zealand Inventory of Chemicals (NZIoC)	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	No

\*A "Yes" indicates that the listed components of this product comply with the inventory requirements administered by the governing country or region.

**16. OTHER INFORMATION****Disclaimer:**

Rocky Mountain Reagents, Inc. provides the information in this Safety Data Sheet in the belief that it is reliable but assumes no responsibility for its completeness or accuracy. The physical properties reported in this SDS are obtained from literature and do not constitute product specifications. Rocky Mountain Reagents, Inc. makes and gives no representations or warranties with respect to the information contained herein or the product to which it refers, whether express, implied, or statutory, including without limitation, warranties of accuracy, completeness, merchantability, non-infringement, performance, safety, suitability, stability, and fitness for a particular purpose. No warranty against infringement of any patent, copyright or trademark is made or implied. This SDS is intended only as a guide to the appropriate handling of the material by a properly trained person. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. Accordingly, Rocky Mountain Reagents, Inc. assumes no liability whatsoever for the use of or reliance upon this information including results obtained, incidental or consequential damages, or lost profits.

**Issue Date:**

August 1, 2024

**Reason for Revision:**

Not applicable.