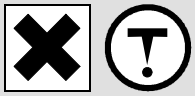
TCI AMERICA

# Material Safety Data Sheet

| HAZARD WARNINGS | RISK PHRASES | PROTECTIVE CLOTHING |
|---|---|---|
|  | **Irritating to skin, eyes, and the respiratory system.**<br>**Harmful compound, minimize exposure.**<br>**POSSIBLE MUTAGEN. MINIMIZE EXPOSURE.** |  |

## Section I. Chemical Product and Company Identification

Chemical Name **Basic Blue 9**

| | |
|---|---|
| Catalog Number | M0501 |
| Synonym | Methylene Blue, CI 52015 |
| Chemical Formula | $C_{16}H_{18}N_3ClS \cdot xH_2O$ |
| CAS Number | 61-73-4 |

Supplier
TCI America
9211 N. Harborgate St.
Portland OR
1-800-423-8616

In case of Emergency Call
**Chemtrec®**
**(800) 424-9300 (U.S.)**
**(703) 527-3887 (International)**

## Section II. Composition and Information on Ingredients

| Chemical Name | CAS Number | Percent (%) | TLV/PEL | Toxicology Data |
|---|---|---|---|---|
| Basic Blue 9 | 61-73-4 | Min 70.0 (W) | This compound is classified as a possible mutagen. There is no acceptable exposure limit for a mutagen. | Rat $LD_{50}$ (oral) 1180 mg/kg<br>Rat $LD_{50}$ (subcutaneous) 190 mg/kg<br>Rat $LD_{50}$ (intraperitoneal) 180 mg/kg<br>Rat $LD_{50}$ (intravenous) 1250 mg/kg |

## Section III. Hazards Identification

**Acute Health Effects**

Irritating to eyes and skin on contact. Inhalation causes irritation of the lungs and respiratory system. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.
Harmful if ingested or inhaled. Minimize exposure to this material. Severe overexposure can result in injury or death.
Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.

**Chronic Health Effects**

**CARCINOGENIC EFFECTS** : Not available.
**MUTAGENIC EFFECTS** : Not available.
**TERATOGENIC EFFECTS** : Not available.
**DEVELOPMENTAL TOXICITY**: Not available.
Repeated or prolonged exposure to this compound is not known to aggravate existing medical conditions.

## Section IV. 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. Get medical attention.

**Skin Contact**

In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

**Inhalation**

If the victim is not breathing, perform mouth-to-mouth resuscitation. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, oxygen can be administered. Seek medical attention if respiration problems do not improve.

**Ingestion**

INDUCE VOMITING by sticking finger in throat. Lower the head so that the vomit will not reenter the mouth and throat. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive.

## Section V. Fire and Explosion Data

| | | | |
|---|---|---|---|
| Flammability | May be combustible at high temperature. | Auto-Ignition | Not available. |
| Flash Points | Not available. | Flammable Limits | Not available. |

**Combustion Products**

These products are toxic carbon oxides (CO, $CO_2$), nitrogen oxides (NO, $NO_2$) , sulfur oxides ($SO_x$), halogenated compounds.
WARNING: Highly toxic HCl gas is produced during combustion.

**Fire Hazards**

Not available.

**Explosion Hazards**

Risks of explosion of the product in presence of mechanical impact: Not available.
Risks of explosion of the product in presence of static discharge: Not available.

***Continued on Next Page***

***Emergency phone number (800) 424-9300***

| | |
|---|---|
| Fire Fighting Media and Instructions | SMALL FIRE: Use DRY chemical powder.<br>LARGE FIRE: Use water spray, fog or foam. DO NOT use water jet.<br>Consult with local fire authorities before attempting large scale fire-fighting operations. |

## Section VI. Accidental Release Measures

| | |
|---|---|
| Spill Cleanup Instructions | Irritating Material.<br>Use a shovel to put the material into a convenient waste disposal container. Finish cleaning the spill by rinsing any contaminated surfaces with copious amounts of water. Consult federal, state, and/or local authorities for assistance on disposal. |

## Section VII. Handling and Storage

| | |
|---|---|
| Handling and Storage Information | IRRITANT. Keep away from heat. Mechanical exhaust required. When not in use, tightly seal the container and store in a dry, cool place. Avoid excessive heat and light. Do not breathe dust.<br>Always store away from incompatible compounds such as oxidizing agents, reducing agents. |

## Section VIII. 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. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product. Be sure to use a MSHA/NIOSH approved respirator or equivalent.<br>  |
| Exposure Limits | This compound is classified as a possible mutagen. There is no acceptable exposure limit for a mutagen. |

## Section IX. Physical and Chemical Properties

| | | | |
|---|---|---|---|
| Physical state @ 20°C | Solid. (Dark Yelllowish Green, Crystalline Powder) | Solubility | Soluble in water and chloroform; sparingly soluble in alcohol. |
| Specific Gravity | Not available. | | |
| Molecular Weight | 319.86 (Anh.) | Partition Coefficient | Not available. |
| Boiling Point | Not available. | Vapor Pressure | Not applicable. |
| Melting Point | 190°C (374°F) | Vapor Density | Not available. |
| Refractive Index | Not available. | Volatility | Not available. |
| Critical Temperature | Not available. | Odor | Nearly Odorless |
| Viscosity | Not available. | Taste | Not available. |

## Section X. Stability and Reactivity Data

| | |
|---|---|
| Stability | This material is stable if stored under proper conditions. (See Section VII for instructions) |
| Conditions of Instability | Avoid excessive heat and light. |
| Incompatibilities | Reactive with oxidizing agents, reducing agents. Reactive with alkalis (bases). |

## Section XI. Toxicological Information

| | |
|---|---|
| RTECS Number | SO5600000 |
| Routes of Exposure | Eye Contact. Ingestion. Inhalation. |
| Toxicity Data | Rat $LD_{50}$ (oral) 1180 mg/kg<br>Rat $LD_{50}$ (subcutaneous) 190 mg/kg<br>Rat $LD_{50}$ (intraperitoneal) 180 mg/kg<br>Rat $LD_{50}$ (intravenous) 1250 mg/kg |
| Chronic Toxic Effects | **CARCINOGENIC EFFECTS** : Not available.<br>**MUTAGENIC EFFECTS** : Not available.<br>**TERATOGENIC EFFECTS** : Not available.<br>**DEVELOPMENTAL TOXICITY**: Not available.<br>Repeated or prolonged exposure to this compound is not known to aggravate existing medical conditions. |
| Acute Toxic Effects | Irritating to eyes and skin on contact. Inhalation causes irritation of the lungs and respiratory system. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.<br>Harmful if ingested or inhaled. Minimize exposure to this material. Severe overexposure can result in injury or death.<br>Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound. |

Continued on Next Page Emergency phone number (800) 424-9300

## Section XII. Ecological Information

| | |
|---|---|
| Ecotoxicity | Not available. |
| Environmental Fate | Methylene blue is used as both the zinc-free product and the zinc chloride double salt. Its principal use is in dyeing paper. Some small amounts are used in leather dyeing and as a polymerization inhibitor in some monomeric organics. Smaller quantities of the zinc-free type are used medicinally and as an injectable solution to combat cyanosis. These and other uses along with its production may result in its release to the environment through various waste streams. Aqueous waste effluents are generated at manufacturing sites where azine and thioazine dyes (such as methylene blue) are produced. Losses of dyes (in general) to wastewater effluents during manufacture have been estimated to be 1-2%. For the organic dye industry in general, it has been estimated that as much as 10% of the dye is lost to wastewater effluents during dyeing operations. If released to soil, methylene blue would be estimated to have very high mobility based upon its high water solubility. However, laboratory adsorption studies determined that methylene blue was strongly adsorbed to three different soils. Volatilization of methylene blue will not be important from moist or dry soil surfaces. Insufficient data are available to determine the rate or importance of biodegradation of methylene blue in soil or water. If released to water, methylene blue would adsorb to suspended solids and sediment based upon soil adsorption studies. Methylene blue will be essentially non-volatile from water surfaces. An estimated BCF value of 1.5 suggests that methylene blue will not bioconcentrate in aquatic organisms. Methylene blue does not contain any functional groups that are expected to hydrolyze in water. If released to the atmosphere methylene blue will exist as both vapor and particulate in the ambient atmosphere. Vapor-phase methylene blue is degraded in the atmosphere by reaction with photochemically produced hydroxyl radicals with an estimated half-life of about 1.9 hours. Direct photolysis in the environment may also be possible. Particulate-phase methylene blue may be physically removed from the air by wet and dry deposition. Occupational exposure may occur through dermal contact or inhalation of dusts at sites where methylene blue is manufactured or used. The general population may be exposed to methylene blue through dermal contact with products which have been dyed with the compound and through ingestion of medicines containing methylene blue. |

## Section XIII. Disposal Considerations

| | |
|---|---|
| Waste Disposal | Recycle to process, if possible. Consult your local regional authorities. You may be able to dissolve or mix material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber system. Observe all federal, state and local regulations when disposing of the substance. |

## Section XIV. Transport Information

| | |
|---|---|
| DOT Classification | Not a DOT controlled material (United States). |
| PIN Number | Not applicable. |
| Proper Shipping Name | Not applicable. |
| Packing Group (PG) | Not applicable. |
| DOT Pictograms |  |

## Section XV. Other Regulatory Information and Pictograms

| | |
|---|---|
| TSCA Chemical Inventory (EPA) | This compound is **ON** the EPA Toxic Substances Control Act (TSCA) inventory list. |
| WHMIS Classification (Canada) | On DSL. |
| EINECS Number (EEC) | 200-515-2 |
| EEC Risk Statements | R20/21/22- Harmful by inhalation, in contact with skin and if swallowed.<br>R36/37/38- Irritating to eyes, respiratory system and skin.<br>R46- May cause heritable genetic damage.<br>R47- May cause birth defects. |
| Japanese Regulatory Data | ENCS No. 5-1995 |

## Section XVI. Other Information

**Version 1.0**
**Validated on 3/1/2005.**
**Printed 3/2/2005.**

**Notice to Reader**

TCI laboratory chemicals are for research purposes only and are NOT intended for use as drugs, food additives, households, or pesticides. The information herein is believed to be correct, but does not claim to be all inclusive and should be used only as a guide. Neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All chemical reagents must be handled with the recognition that their chemical, physiological, toxicological, and hazardous properties have not been fully investigated or determined. All chemical reagents should be handled only by individuals who are familiar with their potential hazards and who have been fully trained in proper safety, laboratory, and chemical handling procedures. Although certain hazards are described herein, we can not guarantee that these are the only hazards which exist. Our MSDS sheets are based only on data available at the time of shipping and are subject to change without notice as new information is obtained. Avoid long storage periods since the product is subject to degradation with age and may become more dangerous or hazardous. It is the responsibility of the user to request updated MSDS sheets for products that are stored for extended periods. Disposal of unused product must be undertaken by qualified personnel who are knowledgeable in all applicable regulations and follow all pertinent safety precautions including the use of appropriate protective equipment (e.g. protective goggles, protective clothing, breathing equipment, facial mask, fume hood). For proper handling and disposal, always comply with federal, state, and local regulations.