Safety Data Sheet METHYLENE BLUE

SDS no. LE7VDD9J • Version 1.0 • Date of issue: 2020-10-20

SECTION 1: Identification

GHS Product identifier

Product name	METHYLENE BLUE

Recommended use of the chemical and restrictions on use

Medicine, dyeing cotton and wool, biological and bacteriological stains, reagent in oxidation-reduction titrations in volumetric analysis and indicator.

Additional information: Do not confuse with methyl blue.

Supplier's details

Name	ChemSupply Australia Pty Ltd
Address	38-50 Bedford Street 5013 Gillman South Australia Australia
Telephone	08 8440 2000
email	www.chemsupply.com

Emergency phone number

CHEMCALL 1800 127 406 (Australia) / +64-4-917-9888 (International)

SECTION 2: Hazard identification

General hazard statement

Not classified as dangerous goods according to the Australian Dangerous Goods Code (ADG).

Classified as Hazardous according to the Globally Harmonised System of classification and labelling of Chemicals (GHS) including Work, Health and Safety regulations, Australia.

Classification of the substance or mixture

GHS classification in accordance with: UN GHS revision 7

- Acute toxicity, oral, Cat. 4

GHS label elements, including precautionary statements

Pictograms

Signal word	**Warning**

Hazard statement(s)

H302	Harmful if swallowed

Precautionary statement(s)

P264	Wash hands thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P301+P312	IF SWALLOWED: Call a POISON CENTER/doctor/physcian if you feel unwell,
P330	Rinse mouth.
P501	Dispose of contents/container to an approved waste disposal facility

SECTION 3: Composition/information on ingredients

Mixtures

Molecular weight: 319.9

Derived by the oxidation of p-amino-dimethylaniline with ferric chloride in the presence of hydrogen sulfide.

Components

Component	Concentration
Methylene Blue anhydrous (CAS no.: 61-73-4; EC no.: 200-515-2)	**100 % (weight)**
CLASSIFICATIONS: Acute toxicity, oral, Cat. 4. HAZARDS: H302 - Harmful if swallowed.	

SECTION 4: First-aid measures

Description of necessary first-aid measures

If inhaled	If inhaled, remove affected person from contaminated area. Keep at rest until recovered. If symptoms develop and/or persist seek medical attention.
In case of skin contact	Rinse with plenty of water. Get medical attention if irritation develops and persists.
In case of eye contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.
If swallowed	Clean mouth with water and drink afterwards plenty of water. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

Indication of immediate medical attention and special treatment needed, if necessary
Treat symptomatically based on judgement of doctor and individual reactions of the patient.

SECTION 5: Fire-fighting measures

Suitable extinguishing media
Specific Methods: Small fire: Use dry chemical, CO2, water spray or foam.
Large fire: Use water spray, fog or foam.

Specific hazards arising from the chemical
Development of hazardous combustion gases or vapours possible in the event of fire.

May burn but do not ignite readily. Runoff may pollute waterways. Fire may produce irritating, poisonous and/or corrosive fumes.

Special protective actions for fire-fighters
Fire fighters should wear full protective clothing and self-contained breathing apparatus (SCBA) operated in positive pressure mode. Fight fire from safe location.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures
Ensure adequate ventilation. Use personal protective equipment. Avoid dust formation. For personal protection see section 8.

Methods and materials for containment and cleaning up
Sweep up and shovel. Do not flush with water. Keep in suitable, closed containers for disposal.

SECTION 7: Handling and storage

Precautions for safe handling
Wear personal protective equipment/face protection. Ensure adequate ventilation. Avoid dust formation. Do not get in eyes, on skin, or on clothing. Avoid ingestion and inhalation.

Conditions for safe storage, including any incompatibilities
Store in a cool, dry, well-ventilated area, out of direct sunlight. Store in suitable, labelled containers. Keep containers tightly closed. Store away from incompatible materials. Ensure that storage conditions comply with applicable local and national regulations.

SECTION 8: Exposure controls/personal protection

Appropriate engineering controls
Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapor, gas, etc.) below recommended exposure limits.

Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection
The use of a face shield, chemical goggles or safety glasses with side shield protection as appropriate. Must comply with Australian Standards AS 1337 and be selected and used in accordance with AS 1336.

Skin protection
Clean impervious clothing should be worn. Clothing for protection against
chemicals should comply with AS 3765 Clothing for Protection Against Hazardous
Chemicals.

Hand Protection: Normally not required but if in doubt ensure hand protection should complies with AS 2161, Occupational protective gloves - Selection, use and maintenance.

Body protection
Suitable protective workwear, e.g. cotton overalls buttoned at neck and wrist is recommended. Chemical resistant apron is recommended where large quantities are handled.

Respiratory protection
If engineering controls are not effective in controlling airborne exposure then an approved respirator with a replaceable vapor/ mist filter should be used. Refer to relevant regulations for further information concerning respiratory protective requirements. Reference should be

made to Australian Standards AS/ NZS 1715, Selection, Use and Maintenance of Respiratory Protective Devices; and AS/NZS 1716, Respiratory Protective Devices, in order to make any necessary changes for individual circumstances.

SECTION 9: Physical and chemical properties

Basic physical and chemical properties

Physical state	Solid
Appearance	Dark-green crystals or powder with bronze-like lustre. Water solutions are deep blue.
Color	Dark-green
Odor	Odourless or slight odour.
Odor threshold	No data available.
Melting point/freezing point	~180 °C (decomposes)
Boiling point or initial boiling point and boiling range	No data available.
Flammability	No data available.
Lower and upper explosion limit/flammability limit	No data available.
Flash point	No data available.
Explosive properties	No data available.
Auto-ignition temperature	No data available.
Decomposition temperature	180 °C
Oxidizing properties	No data available.
pH	pH of 1% solution: 3.8
Kinematic viscosity	No data available.
Solubility	Solubility in Water: Soluble (2 g/L @ 20 °C) Solubility in Organic Solvents: Soluble in alcohol and chloroform. Insoluble in ether.
Partition coefficient n-octanol/water (log value)	No data available.
Vapor pressure	No data available.
Evaporation rate	No data available.
Density and/or relative density	Specific Gravity: 1 g/cm^3
Relative vapor density	No data available.

Particle characteristics
No data available.

Supplemental information regarding physical hazard classes
No data available.

Further safety characteristics (supplemental)
No data available.

SECTION 10: Stability and reactivity

Reactivity
Stable under normal conditions of storage and handling.

Chemical stability
Stable under recommended storage conditions.

Possibility of hazardous reactions
Contact with concentrated acids can give rise to toxic hydrogen sulfide gas.

Conditions to avoid
Heating.

Incompatible materials
Concentrated acids, strong oxidising agents, strong bases, and reducing agents.

Hazardous decomposition products
Toxic hydrogen sulfide gas, sulfur oxides, nitrogent oxides, hydrochloric acid and carbon oxides.

SECTION 11: Toxicological information

Information on toxicological effects

Acute toxicity
Acute Toxicity - Oral: LD50 (rat): 1180 mg/kg (anhydrous substance).

Ingestion: Harmful if swallowed. Large doses may cause nausea, abdominal and chest pain, headache, dizziness, mental confusion, profuse sweating and irritation of the urinary tract and bladder.

Inhalation: Dust may cause irritation.

// ----- From the Suggestion report (29/03/2023, 4:13 PM) ----- //
The ATE (oral) of the mixture is: 500 mg/kg bw

Skin corrosion/irritation
Will stain skin blue. Prolonged contact may give rise to irritation.

Serious eye damage/irritation
May cause irritation and colouration. Risk of serious damage to eyes.

Respiratory or skin sensitization
Not classified based on available information.

Germ cell mutagenicity
Not classified based on available information.

Carcinogenicity
Not classified based on available information.

Reproductive toxicity
Not classified based on available information.

Specific target organ toxicity (STOT) - single exposure
Not classified based on available information.

Specific target organ toxicity (STOT) - repeated exposure
Not classified based on available information.

Aspiration hazard
No data available.

Additional information
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. Exposure can cause: stomach pains, nausea, vomiting, diarrhea, dizziness and headache.

Methylene Blue anhydrous: cat LDLo intravenous 41mg/kg (41mg/kg) Annals of Internal Medicine. Vol. 7, Pg. 738, 1933.

dog LDLo intravenous 50mg/kg (50mg/kg) "Abdernalden's Handbuch der Biologischen Arbeitsmethoden." Vol. 4, Pg. 1366, 1935.
dog LDLo oral 500mg/kg (500mg/kg) "Abdernalden's Handbuch der Biologischen Arbeitsmethoden." Vol. 4, Pg. 1366, 1935.
domestic animals - goat/sheep LD50 intravenous 42300ug/kg (42.3mg/kg) Journal of Veterinary Pharmacology and Therapeutics. Vol. 7, Pg. 225, 1984.
Link to PubMed
guinea pig LDLo subcutaneous 300mg/kg (300mg/kg) "Abdernalden's Handbuch der Biologischen Arbeitsmethoden." Vol. 4, Pg. 1366, 1935.
infant TDLo unreported 15mg/kg (15mg/kg) LUNGS, THORAX, OR RESPIRATION: CYANOSIS

BLOOD: OTHER CHANGES "Toxicology of Drugs and Chemicals," Deichmann, W.B., New York, Academic Press, Inc., 1969Vol. -, Pg. 390, 1969.
man TDLo subcutaneous 28uL/kg (0.028mL/kg) SKIN AND APPENDAGES (SKIN): "DERMATITIS, OTHER: AFTER SYSTEMIC EXPOSURE" British Journal of Clinical Practice. Vol. 28, Pg. 289, 1974.
Link to PubMed
monkey LDLo intravenous 10mg/kg (10mg/kg) "Abdernalden's Handbuch der Biologischen Arbeitsmethoden." Vol. 4, Pg. 1366, 1935.
mouse LD50 intraperitoneal 150mg/kg (150mg/kg) National Technical Information Service. Vol. AD691-490,
mouse LD50 intravenous 77mg/kg (77mg/kg) Cesko-Slovenska Farmacie. Vol. 12, Pg. 94, 1963.
Link to PubMed
mouse LD50 oral 3500mg/kg (3500mg/kg) Cesko-Slovenska Farmacie. Vol. 12, Pg. 94, 1963.
Link to PubMed
rabbit LDLo oral 1gm/kg (1000mg/kg) "Abdernalden's Handbuch der Biologischen Arbeitsmethoden." Vol. 4, Pg. 1366, 1935.
rat LD50 intraperitoneal 180mg/kg (180mg/kg) Naunyn-Schmiedeberg's Archiv fuer Experimentelle Pathologie und Pharmakologie. Vol. 204, Pg. 288, 1947.
rat LD50 intravenous 1250mg/kg (1250mg/kg) Arzneimittel-Forschung. Drug Research. Vol. 18, Pg. 676, 1968.
Link to PubMed
rat LD50 oral 1180mg/kg (1180mg/kg) "Prehled Prumyslove Toxikologie; Organicke Latky," Marhold, J., Prague, Czechoslovakia, Avicenum, 1986Vol. -, Pg. 1334, 1986.
rat LD50 subcutaneous 190mg/kg (190mg/kg) Drugs in Japan Vol. -, Pg. 1185, 1990.

SECTION 12: Ecological information

Toxicity
Do not empty into drains.

Persistence and degradability
Soluble in water Persistence is unlikely based on information available.

Bioaccumulative potential
No data available.

Mobility in soil
Will likely be mobile in the environment due to its water solubility.

Results of PBT and vPvB assessment
No data available.

Endocrine disrupting properties
No data available.

Other adverse effects
Other Information: Has mild antiseptic properties, generally not considered dangerous to the environment, however will leave intense blue colour if allowed to come into contact with the environment. Solution of this product has been used for treatment of sick aquarium fish.

SECTION 13: Disposal considerations

Disposal methods

Product disposal
Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers.

Other disposal recommendations
Do not discharge this material into waterways, drains and sewers.

SECTION 14: Transport information

ADG (Road and Rail)
Not dangerous goods

IMDG
Not dangerous goods

IATA
Not dangerous goods

SECTION 15: Regulatory information

Safety, health and environmental regulations specific for the product in question

Australia SUSMP
Poison Schedule: NS

Canadian Domestic Substances List (DSL)
Chemical name: Phenothiazin-5-ium, 3,7-bis(dimethylamino)-, chloride
CAS: 61-73-4

SECTION 16: Other information

Further information/disclaimer
ChemSupply Australia Pty Ltd does not warrant that this product is suitable for any use or purpose. The user must ascertain the suitability of the product before use or application intended purpose. Preliminary testing of the product before use or application is recommended. Any reliance or purported reliance upon ChemSupply Australia Pty Ltd with respect to any skill or judgement or advice in relation to the suitability of this product of any purpose is disclaimed. Except to the extent prohibited at law, any condition implied by any statute as to the merchantable quality of this product or fitness for any purpose is hereby excluded. This product is not sold by description. Where the provisions of Part V, Division 2 of the Trade Practices Act apply, the liability of ChemSupply Australia Pty Ltd is limited to the replacement of supply of equivalent goods or payment of the cost of replacing the goods or acquiring equivalent goods.