

Living up to Life



BIOSYSTEMS

Safety Data Sheet

Malachite Green Solution

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND THE COMPANY

1.1 Product Identifier

Trade Name Malachite Green Solution
Product # 3812912 38016SS8B 38017SS7
SDS # 187
SDS Date August 22, 2013

1.2 Relevant Identified Uses of the Substance or Mixture and Uses Advised Against

Product Use: Differentiator and Counter Stain
Uses Advised Against: All other uses.

1.3 Details of the Supplier of the Substance or Mixture

Manufacturer/Preparer: Leica Biosystems Richmond, Inc. Leica Biosystems Canada, Inc.
5205 Route 12 83 Terracon Place
Richmond, IL 60071 Winnipeg, Manitoba R2J 4B3
800-225-8867 800-665-7425

1.4 Emergency Telephone Number

Emergency Spill Information 1-800- 424-9300 (CHEMTREC)
+1-703-527-3887 International calls (call collect)
Other Product Information: 1-800-225-8867

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the Substance or Mixture

CLP/GHS Classification (1272/2008):

| Physical: | Health: | Environmental |
|---------------|---|--|
| Not Hazardous | Reproductive Toxicity Category 2 Eye Damage Category 1 Skin Irritation Category 2 | Aquatic Acute Toxicity Category 3 Aquatic Chronic Toxicity Category 3 |

EU Classification (67/548/EEC): Xi, R36/38, R52/53

2.2 Label Elements

DANGER! Contains Acetic Acid and Malachite Green Oxalate



Hazard Phrases

| | |
|------|--|
| H315 | Causes skin irritation. |
| H318 | Causes serious eye damage |
| H361 | Suspected of damaging fertility or the unborn child. |
| H412 | Harmful to aquatic life with long lasting effects. |

Precautionary Phrases

| | |
|--------------------|--|
| P201 | Obtain special instructions before use. |
| P264 | Wash thoroughly after handling. |
| P273 | Avoid release to the environment. |
| P280 | Wear eye protection/face protection/protective gloves. |
| P302 + P352 | IF ON SKIN: Wash with plenty of soap and water. |
| P332 + P313 | If skin irritation occurs: Get medical advice/ attention. |
| P362 | Take off contaminated clothing and wash before reuse. |
| P305 + P351 + P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| P310 | Immediately call a POISON CENTER or doctor/physician. |
| P308 + P313 | IF exposed or concerned: Get medical advice/ attention. |
| P405 | Store locked up. |
| P501 | Dispose of contents/container in accordance with local and national regulations. |

2.3 Other Hazards: None

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

| Chemical Name | CAS Number / EINECS Number / REACH Reg. Number | % (w/w) | EU Classification (67/548/EEC) | CLP/GHS Classification (1272/2008) |
|-------------------------|--|---------|---|--|
| Glycerol | 56-81-5 / 200-289-5 | <17 | Not classified as dangerous | Not classified as hazardous |
| Acetic Acid | 64-19-7 / 200-580-7 | <10 | C R10, R35 | Flammable Liquid Category 3 (H226) Skin Corrosive Category 1A (H314) Eye Damage Category 1 (H318) |
| Malachite Green Oxalate | 2437-29-8 / 219-441-7 | <1.5 | Xn, Xi, N Repro Cat 3 R63, R22, R41, R50/53 | Reproductive Toxicity Category 2 (H316d), Acute Toxicity Category 3 (H301), Eye Damage Category 1 (H318), Aquatic Acute Toxicity Category 1 (H400), Aquatic Chronic Toxicity Category 1 (H410) |

See Section 16 for full text of GHS and EU Classifications.

SECTION 4: FIRST AID MEASURES

4.1 Description of First Aid Measures

First Aid

Eye contact: Immediately flush eye with water for at least 20 minutes while lifting the upper and lower lids. Get immediate medical attention.

Skin contact: Wash thoroughly with soap and water. Get medical attention if irritation develops. Remove contaminated clothing and launder before reuse.

Inhalation: Remove victim to fresh air. Get medical attention if irritation persists. If breathing is difficult have qualified individual administer oxygen and get immediate medical attention. If breathing stops, give artificial respiration and get immediate medical attention.

Ingestion: Do not induce vomiting unless directed to do so by medical personnel. If the victim is conscious and alert, have them rinse their mouth with water. Never give anything by mouth to an unconscious or drowsy person. Get immediate medical attention.

See Section 11 for more detailed information on health effects.

4.2 Most Important symptoms and effects, both acute and delayed: Causes severe eye irritation or burns. May cause skin irritation. Vapors or mists may cause respiratory irritation. May cause developmental effects based on animal studies.

4.3 Indication of any immediate medical attention and special treatment needed: Immediate medical treatment is required for eye contact and ingestion.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing Media:

Use dry chemical, foam, carbon dioxide (CO₂), or water spray.

5.2 Special Hazards Arising from the Substance or Mixture

Unusual Fire and Explosion Hazards: None known.

Combustion Products: Oxides of carbon and nitrogen.

5.3 Advice for Fire-Fighters: Self-contained breathing apparatus and protective clothing should be worn in fighting large fires involving chemicals. Determine the need to evacuate or isolate the area according to your local emergency plan. Use water spray to keep fire exposed containers cool.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions, Protective Equipment and Emergency Procedures:

Wear appropriate protective equipment.

6.2 Environmental Precautions:

Prevent entry in storm sewers and waterways. Report spill as required by local and federal regulations.

6.3 Methods and Material for Containment and Cleaning Up:

Stop spill at the source if it is safe to do so. Absorb with an inert material. Collect into a suitable container for disposal.

6.4 Reference to Other Sections:

Refer to Section 8 for personal protective equipment and Section 13 for disposal information.

SECTION 7: HANDLING and STORAGE

7.1 Precautions for Safe Handling:

Prevent eye contact. Avoid contact with skin and clothing. Avoid breathing vapors or mists. Use only with adequate ventilation. Wash thoroughly after handling. Remove contaminated clothing and launder before re-use. Keep containers closed when not in use.

7.2 Conditions for Safe Storage, Including any Incompatibilities:

Protect containers from physical damage. Store in a cool area. Keep away from excessive heat and open flames. Keep containers closed when not in use. Store away from oxidizers and other incompatible materials.

Empty containers retain product residues. Follow all SDS precautions in handling empty containers

7.3 Specific end use(s):

Industrial uses: None identified

Professional uses: Biological stain

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control Parameters:

| Chemical Name | US OEL | EU IOEL | UK OEL | Germany OEL |
|-------------------------|--|------------------|---------------------------|--|
| Glycerol | 5 mg/m ³ TWA OSHA PEL (respirable dust), 15 mg/m ³ TWA (inhalable dust) 10 mg/m ³ TWA ACGIH TLV (mist) | None Established | 10 mg/m ³ TWA | 50 mg/m ³ TWA (inhalable aerosol) 100 mg/m ³ STEL (inhalable aerosol) |
| Acetic Acid | 10 ppm TWA OSHA PEL 10 ppm TWA , 15 ppm STEL ACGIH TLV | 10 ppm TWA | 10 ppm TWA 15 ppm STEL | 10 ppm TWA 20 ppm STEL |
| Malachite Green Oxalate | None Established | None Established | None Established | None Established |

Refer to local or national authority for exposure limits not listed above.

| Chemical Name | Biological Limit Value |
|-------------------------|------------------------|
| Glycerol | None Established |
| Acetic Acid | None Established |
| Malachite Green Oxalate | None Established |

8.2 Exposure Controls:

Recommended Monitoring Procedures: Collection on charcoal tubes with analysis by gas chromatography.

Appropriate Engineering Controls: Use with adequate local exhaust ventilation to maintain exposure levels below the occupational exposure limits.

Personal Protective Measures

Eye/face Protection: Wear chemical goggles.

Skin Protection: Impervious clothing as needed to avoid skin contact.

Hands: Impervious gloves recommended (butyl rubber or neoprene).

Respiratory Protection: None needed with adequate ventilation. If the occupational exposure limit is exceeded, use an approved organic vapor respirator. Selection of respiratory protection depends on the contaminant type, form and concentration. Select in accordance with OSHA 1910.134 or other applicable regulations and good Industrial Hygiene practice.

Other protection: Suitable washing facilities should be available.

SECTION 9: PHYSICAL and CHEMICAL PROPERTIES

9.1 Information on basic Physical and Chemical Properties

Appearance: Clear green liquid

Odor Threshold: 0.48 ppm (acetic acid)

Melting/Freezing Point: Not available

Flash Point: : Not flammable

Lower Flammability Limit: 4.0% (acetic acid)

Upper Flammability Limit: 19.9% (acetic acid)

Vapor Density(Air=1): 2.07

Solubility: Soluble in water

Autoignition Temperature: Not available

Viscosity: Not established

Oxidizing Properties: None

Molecular Formula: Mixture

Odor: Vinegar odor

pH: 2.0

Boiling Point: 100°C (212°F)

Evaporation Rate: Not determined

Vapor Pressure: 2.01 kPA @ 20°C

Relative Density: 1.02

Octanol/Water Partition Coefficient: Not available

Decomposition Temperature: Not established

Explosive Properties: Not explosive

Specific Gravity (H₂O= 1): 1.02

Molecular Weight: Mixture

9.2 Other Information: None available

SECTION 10: STABILITY and REACTIVITY

10.1 Reactivity: This material is not reactive under normal conditions.

10.2 Chemical Stability: Normally stable.

10.3 Possibility of Hazardous Reactions: None known.

10.4 Conditions to Avoid: Avoid excessive heat.

10.5 Incompatible Materials: Oxidizing agents, strong bases.

10.6 Hazardous Decomposition Products: Thermal breakdown of this product during fire or very high heat conditions may evolve the following decomposition products: oxides of carbon and nitrogen.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on Toxicological Effects:

Potential Health Effects:

Eye Contact: Causes severe irritation with redness, pain, tearing and swelling. May cause eye damage.

Skin contact: Causes irritation and dryness. Repeated exposure may cause dermatitis.

Inhalation: Mists may cause mucous membrane and upper respiratory tract irritation.

Ingestion: Swallowing may cause abdominal pain, nausea, vomiting and diarrhea.

Acute toxicity:

Glycerin: Oral Rat LD50 >12,600 mg/kg.

Acetic Acid: LD50 oral rat 3.31 g/kg, LD50 dermal rabbit 1060 mg/kg, LD50 inhalation rat 11.4 mg/kg/4 hr.

Malachite Green Oxalate: 275 mg/kg

Skin corrosion/irritation: No data available for mixture. Acetic acid at less than 10% is slightly irritating to rabbit skin. Glycerin is not irritating to rabbit or human skin.

Eye damage/ irritation: No data available for mixture. Acetic acid and malachite green oxalate may be damaging to eyes. Glycerin is slightly irritating to rabbit eyes.

Respiratory Irritation: No data available for mixture. High concentrations of vapors may be irritating to the respiratory system.

Respiratory Sensitization: No data available for mixture. None of the components are respiratory sensitizers.

Skin Sensitization: No data available for mixture. None of the components are skin sensitizers.

Germ Cell Mutagenicity: No data available for mixture. Malachite green is capable of interacting with DNA of living cells and induces change.

Carcinogenicity: No data available for mixture. None of the components of this product are listed as carcinogens by OSHA, ACGIH, IARC, NTP, or the EU Dangerous Substances Directive.

Reproductive Toxicity: No data available for mixture. Malachite Green Oxalate has been shown to cause developmental effects in studies with laboratory animals.

Specific Target Organ Toxicity:

Single Exposure: Malachite green has been shown to cause eye injury including conjunctival edema, hyperemia, opacification and necrosis.

Repeat Exposure: In a 13 week sub-chronic inhalation study with rats, glycerin was found to cause mild irritation of mucous membranes.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity:

Glycerin: 96 hr LC50 *Oncorhynchus mykiss* (Rainbow trout) 54,000 mg/L, 48 hr EC50 *daphnia magna* 10,000 mg/L

Acetic Acid: LC50 *Pimephales promelas* (Fathead minnow) 79 mg/L/96 hr

Malachite Green: 96 hr LC50 *Ictalurus punctatus* 0.14 mg/L; 48 hr EC50 *daphnia magna* 0.29 mg/L

12.2 Persistence and degradability: Glycerin is readily biodegradable (63% after 14 days)

12.3 Bioaccumulative Potential: No data available.

12.4 Mobility in Soil: Glycerin is expected to have very high mobility in soil.

12.5 Results of PVT and vPvB assessment: Not required.

12.6 Other Adverse Effects: No data available.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste Treatment Methods:

Dispose in accordance with local, state and national regulations.

SECTION 14: TRANSPORTATION INFORMATION

| | 14.1 UN Number | 14.2 UN Proper Shipping Name | 14.3 Hazard Class(s) | 14.4 Packing Group | 14.5 Environmental Hazards |
|--------------|----------------|------------------------------|----------------------|--------------------|----------------------------|
| US DOT | UN2790 | Acetic Acid Solution | 8 | III | No |
| Canadian TDG | UN2790 | Acetic Acid Solution | 8 | III | No |
| EU ADR/RID | UN2790 | Acetic Acid Solution | 8 | III | No |
| IMDG | UN2790 | Acetic Acid Solution | 8 | III | No |
| IATA/ICAO | UN2790 | Acetic Acid Solution | 8 | III | No |

14.6 Special Precautions for User: None

14.7 Transport in Bulk According to Annex III MARPOL 73/78 and the IBC Code: Not determined.

SECTION 15: REGULATORY INFORMATION

15.1 Safety, Health and Environmental Regulations/Legislation Specific for the Substance or Mixture

INTERNATIONAL INVENTORIES

EPA TSCA INVENTORY: All of the components are listed on the TSCA inventory or exempt.

CANADIAN ENVIRONMENTAL PROTECTION ACT: All of the ingredients are listed on the Canadian Domestic Substances List.

EUROPEAN UNION: All of the components of this product are listed on the European Inventory of New and Existing Chemical Substances (EINECS) inventory.

AUSTRALIA: All of the ingredients of this product are listed on the Australian Inventory of Chemical Substances (AICS).

CHINA: All of the ingredients are listed on the Chinese chemical inventory.

KOREA: All of the components of this product are listed on the Korean Existing Chemical List (KECL).

NEW ZEALAND: All of the components of this product are listed on the New Zealand Inventory of Chemicals (NzIoC).

PHILIPPINES: All of the components of this product are listed on the Philippine Inventory of Chemicals and Chemical Substances (PICCS).

JAPAN: All of the components of this product are listed on the Japanese Existing and New Chemical Substances List (ENCS).

U.S. REGULATIONS

OSHA HAZARD CLASSIFICATION: Flammable, Corrosive, Target Organ Effects

EPA SARA 302: This product does not contain chemicals regulated under SARA Section 302.

CERCLA Section 103: The RQ for the product, based on the RQ for Acetic Acid (10% maximum) of 5000 lbs, is 50,000 lbs. Many states have more stringent release reporting requirements. Report spills required under federal, state and local regulations.

EPA SARA 311 HAZARD CLASSIFICATION: Acute Health, Chronic Health

EPA SARA 313: This product contains the following chemicals that are regulated under SARA Title III, section 313:

CALIFORNIA PROPOSITION 65: This product contains the following chemicals which are known to the State of California to cause cancer, reproductive toxicity or birth defects (developmental toxicity): None known

INTERNATIONAL REGULATIONS

WHMIS CLASSIFICATION: Class E, Class D-2-A

SECTION 16: OTHER INFORMATION

Revision History: Updated Logo and website.

EU Classes and Risk Phrases for Reference (See Sections 2 and 3)

Xi Irritant
Xn Harmful
C Corrosive
N Dangerous for the Environment
Repro Cat 3 Reproductive Category 3
R10 Flammable
R22 Harmful if swallowed.
R35 Causes severe burns
R36/38 Irritating to eyes and skin.
R41 Risk of serious damage to the eyes.
R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R63 Possible risk of harm to the unborn child.

CLP/GHS Classification and H Phrases for Reference (See Section 3)

H226 Flammable liquid and vapor.
H301 Toxic if swallowed.
H314 Causes severe skin burns and eye damage.
H318 Causes serious eye damage.
H361d Suspected of damaging unborn child.
400 Very toxic to aquatic life.
410 Very toxic to aquatic life with long lasting effects.

NFPA Rating: Health: 3 Fire: 0 Instability: 0
HMIS Rating: Health: 3 Fire: 0 Physical Hazard: 0

This Safety Data Sheet has been prepared in accordance with the REACH regulation in the EU and the Globally Harmonized System for the Classification and Labelling of Chemicals (GHS). It complies with the requirements of the Canadian Controlled Products Regulations and US 29CFR 1910.1200. To the best of our knowledge, the information contained herein is accurate. However,

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