Material Safety Data Sheet

Catalog Number: 195323
Revision date: 26-Apr-2006

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY INFORMATION

Catalog Number: 195323

Product name: METHYL VIOLOGEN

Synonyms: Paraquat Dichloride; 1,1'-Dimethyl-4,4'-bipyridinium dichloride; Cekuquat; Crisquat; Dextrone; N,N'-Diemethyl-4,4'-bipyridinium chloride; Dimethyl viclogen chloride; Esgram; Gramozone

Supplier: MP Biomedicals, LLC
29525 Fountain Parkway
Solon, OH 44139
tel: 440-337-1200

Emergency telephone number: CHEMTREC: 1-800-424-9300 (1-703-527-3887)

2. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS Number</th>
<th>Weight %</th>
<th>ACGIH Exposure Limits</th>
<th>OSHA Exposure Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>METHYL VIOLOGEN</td>
<td>1910-42-5</td>
<td>90 - 100%</td>
<td>0.5 mg/m³ TWA; 0.1 mg/m³ TWA (respirable fraction)</td>
<td>0.5 mg/m³ TWA (respirable dust)</td>
</tr>
</tbody>
</table>

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Toxic in contact with skin. May be toxic by ingestion or inhalation.

Category of Danger:
Toxic

Principle routes of exposure:
Skin
Inhalation: Harmful by inhalation.
Ingestion: Harmful if swallowed.
Skin contact: Toxic in contact with skin.
Eye contact: Risk of serious damage to eyes

Statements of hazard:
Toxic in contact with skin

Statement of Spill or Leak - ANSI Label
Eliminate all ignition sources. Absorb and/or contain spill with inert materials (e.g., sand, vermiculite). Then place in appropriate container. For large spills, use water spray to disperse vapors, flush spill area. Prevent runoff from entering waterways or sewers.

Statement of First Aid:
If swallowed, do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Call a physician. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Call a physician.

Precautions - ANSI Label
Do not taste or swallow. Wash thoroughly after handling. Avoid contact with skin, eyes and clothing. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. Avoid breathing vapors.

4. FIRST AID MEASURES
General advice: In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

Inhalation: Move to fresh air. Call a physician immediately.

Skin contact: Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Remove and wash contaminated clothing before re-use. Rinse immediately with plenty of water for at least 15 minutes. Call a physician immediately.

Ingestion: Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Consult a physician. If swallowed, seek medical advice immediately and show this container or label.

Eye contact: Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.

Protection of first-aiders: No information available

Medical conditions aggravated by exposure: None known

5. FIRE FIGHTING MEASURES

Suitable extinguishing media: Use dry chemical, CO2, water spray or "alcohol" foam.

Specific hazards: Burning produces irritant fumes.

Unusual hazards: None known

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.

Specific methods: Water mist may be used to cool closed containers.

Flash point: Not determined

Autoignition temperature: Not determined

NFPA rating:
- NFPA Health: 2
- NFPA Flammability: 1
- NFPA Reactivity: 0

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Use personal protective equipment.

Environmental precautions: Prevent product from entering drains.

Methods for cleaning up: Sweep up and shovel into suitable containers for disposal.

7. HANDLING AND STORAGE

Storage: ROOM TEMPERATURE

Handling: Use only in area provided with appropriate exhaust ventilation.

Safe handling advice: Wear personal protective equipment. Remove and wash contaminated clothing before reuse.

Technical measures/storage conditions: Keep containers tightly closed in a cool, well-ventilated place. Keep container tightly closed in a dry and well-ventilated place.

Incompatible products: Oxidising and spontaneously flammable products

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering measures: Ensure adequate ventilation.

PERSONAL PROTECTIVE EQUIPMENT

Respiratory protection: Breathing apparatus only if aerosol or dust is formed.

Hand protection: PVC or other plastic material gloves

Skin and body protection: Impervious clothing

Eye protection: Safety glasses with side-shields
Hygiene measures: Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state:</td>
<td>Powder</td>
</tr>
<tr>
<td>Formula:</td>
<td>C12H14N2•2Cl</td>
</tr>
<tr>
<td>Molecular weight:</td>
<td>257.18</td>
</tr>
<tr>
<td>Melting point/range:</td>
<td>&gt;300°C</td>
</tr>
<tr>
<td>Boiling point/range:</td>
<td>No Data available at this time.</td>
</tr>
<tr>
<td>Vapor pressure:</td>
<td>approximately 0 mm at 20 °C</td>
</tr>
<tr>
<td>Density:</td>
<td>No data available</td>
</tr>
<tr>
<td>Solubility (in water):</td>
<td>No data available</td>
</tr>
<tr>
<td>Flash point:</td>
<td>Not determined</td>
</tr>
<tr>
<td>Autoignition temperature:</td>
<td>Not determined</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stability:</td>
<td>Stable under recommended storage conditions.</td>
</tr>
<tr>
<td>Polymerization:</td>
<td>None under normal processing.</td>
</tr>
<tr>
<td>Hazardous decomposition products:</td>
<td>Chloride/Hydrochloric acid, Nitrogen oxides (NOx)/ammonia/CN-</td>
</tr>
<tr>
<td>Materials to avoid:</td>
<td>Strong oxidising agents</td>
</tr>
<tr>
<td>Conditions to avoid:</td>
<td>Exposure to air or moisture over prolonged periods.</td>
</tr>
</tbody>
</table>

11. TOXICOLOGICAL INFORMATION

<table>
<thead>
<tr>
<th>Information</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity</td>
<td></td>
</tr>
<tr>
<td>Components</td>
<td>METHYL VIOLOGEN</td>
</tr>
<tr>
<td>RTECS Number:</td>
<td>DW2275000</td>
</tr>
<tr>
<td>Selected LD50s and LC50s</td>
<td></td>
</tr>
<tr>
<td>Oral LD50 Rat:</td>
<td>57 mg/kg</td>
</tr>
<tr>
<td>Oral LD50 Mouse:</td>
<td>120 mg/kg</td>
</tr>
<tr>
<td>Dermal LD50 Rabbit:</td>
<td>325 mg/kg</td>
</tr>
<tr>
<td>Chronic toxicity:</td>
<td>Chronic exposure may cause nausea and vomiting, higher exposure causes unconsciousness.</td>
</tr>
<tr>
<td>Local effects:</td>
<td>Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.</td>
</tr>
<tr>
<td>Specific effects:</td>
<td>May include moderate to severe erythema (redness) and moderate edema (raised skin), nausea, vomiting, headache.</td>
</tr>
<tr>
<td>Primary irritation:</td>
<td>No data is available on the product itself.</td>
</tr>
<tr>
<td>Carcinogenic effects:</td>
<td>No data is available on the product itself.</td>
</tr>
<tr>
<td>Mutagenic effects:</td>
<td>No data is available on the product itself.</td>
</tr>
<tr>
<td>Reproductive toxicity:</td>
<td>No data is available on the product itself.</td>
</tr>
<tr>
<td>Components</td>
<td>METHYL VIOLOGEN</td>
</tr>
<tr>
<td>NIOSH - Health Effects</td>
<td>Eye, mucous membrane, and skin irritation</td>
</tr>
<tr>
<td>NIOSH - Target Organs</td>
<td>eyes, respiratory system, heart, liver, kidneys, GI tract, skin</td>
</tr>
</tbody>
</table>

12. ECOLOGICAL INFORMATION

<table>
<thead>
<tr>
<th>Information</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobility:</td>
<td>No data available</td>
</tr>
<tr>
<td>Bioaccumulation:</td>
<td>No data available</td>
</tr>
<tr>
<td>Ecotoxicity effects:</td>
<td>No data available</td>
</tr>
</tbody>
</table>
Aquatic toxicity: May cause long-term adverse effects in the aquatic environment.

Components

**U.S. DOT - Appendix B - Marine Pollutants**
- METHYL VIOLOGEN: Not Listed

**U.S. DOT - Appendix B - Severe Marine Pollutants**
- METHYL VIOLOGEN: Not Listed

**United Kingdom - The Red List:**
- METHYL VIOLOGEN: Not Listed

**Components**

**Germany VCI (WGK)**
- METHYL VIOLOGEN: Not Listed

**World Health Organization (WHO) - Drinking Water**
- METHYL VIOLOGEN: Not Listed

**Ecotoxicity - Fish Species Data**
- METHYL VIOLOGEN: LC50 (48 hr) rainbow trout: 38-62 mg/L.; LC50 (48-96 hr) rainbow trout: 15 mg/L.; LC50 (96 hr) guppy: 7-11 mg/L.

**Components**

**Ecotoxicity - Freshwater Algae Data**
- METHYL VIOLOGEN: Not Listed

**Ecotoxicity - Microtox Data**
- METHYL VIOLOGEN: EC50 (5 min) Photobacterium phosphoreum: 967 mg/L Microtox test.

**Ecotoxicity - Water Flea Data**
- METHYL VIOLOGEN: LC50 (24 h) water flea: 45 mg/L.

**Components**

**EPA - ATSDR Priority List**
- METHYL VIOLOGEN: Not Listed

**EPA - HPV Challenge Program Chemical List**
- METHYL VIOLOGEN: Not Listed

**California - Priority Toxic Pollutants**
- METHYL VIOLOGEN: Not Listed

**13. DISPOSAL CONSIDERATIONS**

Waste from residues / unused products:
Waste disposal must be in accordance with appropriate Federal, State, and local regulations. This product, if unaltered by use, may be disposed of by treatment at a permitted facility or as advised by your local hazardous waste regulatory authority. Residue from fires extinguished with this material may be hazardous.

Contaminated packaging:
Do not re-use empty containers

**14. TRANSPORT INFORMATION**

**UN/Id No:** 2811

**DOT:**
- **Proper shipping name:** Toxic solid, organic, n.o.s.
- **IATA Hazard Label(s):**
- **Hazard Class:** 6.1 - Toxic substances - dermal
- **Packing group:** II

**Emergency Response Guide Number (ERG):** 154

**Components**

**U.S. DOT - Appendix A Table 1 - Reportable Quantities**
- METHYL VIOLOGEN: Not Listed

**TDG (Canada):**
- Catalog Number: 195323
- Product name: METHYL VIOLOGEN

Page 4 of 6
WHMIS hazard class:
D1b toxic materials
D2b toxic materials

IMDG/IMO
Proper shipping name:
Toxic solid, organic, n.o.s.

IMDG - Hazard Classifications
Not Applicable

Components U.S. DOT - Appendix B - Marine Pollutants U.S. DOT - Appendix B - Severe Marine Pollutants
METHYL VIOLOGEN Not Listed Not Listed

IMO-labels:

15. REGULATORY INFORMATION

International Inventories

Components METHYL VIOLOGEN
Inventory - United States TSCA - Sect. 8(b) Not Listed
Canada DSL Inventory List - Not Listed
Australia (AICS): Present
EU EINECS List - 217-615-7; C12H14N2.2Cl
Korean KECL: KE-11239
Philippines PICCS: Present

U.S. regulations:

Components METHYL VIOLOGEN
California Proposition 65 - Not Listed
Massachusetts Right to Know List: extraordinarily hazardous
New Jersey Right to Know List: sn 1458
Pennsylvania Right to Know List: environmental hazard

Components METHYL VIOLOGEN
Florida substance List: [present]
Rhode Island Right to Know List: Toxic
Illinois - Toxic Air Contaminants Not Listed
Connecticut - Hazardous Air Pollutants 2 ug/m³ HLV (respirable sizes)

Components METHYL VIOLOGEN
SARA 313 Emission reporting/Toxic Release of Chemicals
form R reporting required for 1.0% de minimis concentration
CERCLA/SARA - Section NTP: 302 Extremely Haz
TPQ = 10/10,000 pounds; RQ = 10 pounds
IARC: None

SARA 313 Notification:
The above is your notification as to the SARA 313 listing for this product(s) pursuant to Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

If you are unsure if you are subject to the reporting requirements of Section 313, or need more information, please call the EPA Emergency Planning and Community Right-To-Know Information Hotline: (800) 535-0202 or (202) 479-2499 (in Washington, DC or Alaska).

Catalog Number: 195323
Product name: METHYL VIOLOGEN
Page 5 of 6
State Notification: The above information is your notice as to the Right-to-Know listings of the stated product(s). Individual states will list chemicals for a variety of reasons including, but not limited to, the compounds toxicity; carcinogenic, tumorigenic and/or reproductive hazards; and the compounds environmental impact if accidentally released.

16. OTHER INFORMATION

Prepared by: Health & Safety
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End of Safety Data Sheet