Material Safety Data Sheet  
Crystal Violet

Section 1. Product and Company Identification

Product name: Crystal Violet  
Product code: 192  
Synonym: Basic Violet 3  
Material uses: Other non-specified industry: Analytical reagent.  
Manufacturer: EMD Chemicals Inc.  
P.O. Box 70  
480 Democrat Road  
Gibbstown, NJ 08027  
856-423-6300 Technical Service  
Monday - Friday: 8:00 - 5:00 PM  
Validation date: 8/24/2007.  
Print date:  
In case of emergency:  
800-424-9300 CHEMTREC (USA)  
613-996-6666 CANUTEC (Canada)  
24 Hours/Day: 7 Days/Week

Section 2. Hazards Identification

Physical state: Solid. (Crystalline powder)  
Odor: Odorless.  
OSHA/HCS status: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).  
Emergency overview: WARNING!  
CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION.  
HARMFUL IF INHALED.  
MAY BE HARMFUL IF SWALLOWED.  
CANCER HAZARD.  
CONTAINS MATERIAL WHICH CAN CAUSE CANCER.  
CONTAINS MATERIAL WHICH MAY CAUSE DAMAGE TO THE FOLLOWING ORGANS:  
SKIN  
WARNING: This product contains a chemical(s) known to the State of California to cause cancer.  
Do not ingest. Avoid contact with skin and clothing. Avoid breathing dust. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Risk of cancer depends on duration and level of exposure.

Routes of entry  
Inhalation. Ingestion.

Potential acute health effects  
Eyes: Irritating to eyes.  
Skin: Irritating to skin.  
Inhalation: Toxic by inhalation. Irritating to respiratory system.  
Ingestion: Harmful if swallowed.  
Carcinogenic effects: Contains material which can cause cancer. Risk of cancer depends on duration and level of exposure.  
Mutagenic effects: No known significant effects or critical hazards.  
Teratogenicity / Reproductive toxicity: No known significant effects or critical hazards.  
Medical conditions aggravated by over-exposure: Repeated skin exposure can produce local skin destruction or dermatitis. Repeated or prolonged exposure to the substance can produce lung damage. Repeated exposure of the eyes to a low level of dust can produce eye irritation. Repeated or prolonged exposure to the substance can produce target organs damage.

See toxicological information (section 11)
Eye contact: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention.

Skin contact: Get medical attention immediately. Flush contaminated skin with plenty of water. Continue to rinse for at least 10 minutes. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing or wear gloves. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Inhalation: Get medical attention immediately. Move exposed person to fresh air. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Ingestion: Get medical attention immediately. Wash out mouth with water. Remove dentures if any. Move exposed person to fresh air. Keep person warm and at rest. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Protection of first-aiders: No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Section 5. Fire Fighting Measures

Flammability of the product: No specific hazard.

Extinguishing media
Suitable: Use an extinguishing agent suitable for the surrounding fire.
Not suitable: None known.

Special protective equipment for fire-fighters
Special protective equipment for fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Special remarks on explosion hazards
Dust can combine with air to form an explosive mixture. Thermal decomposition may release toxic and/or hazardous gases.

Section 6. Accidental Release Measures

Personal precautions: Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment.

Environmental precautions: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Methods for cleaning up: If emergency personnel are unavailable, vacuum or carefully scoop up spilled material and place in an appropriate container for disposal by incineration. Avoid creating dusty conditions and prevent wind dispersal.

Section 7. Handling and Storage

Handling: Do not ingest. Avoid contact with eyes, skin and clothing. Keep container closed. Use only with adequate ventilation. Avoid breathing dust. Wash thoroughly after handling.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8. Exposure Controls/Personal Protection

Consult local authorities for acceptable exposure limits.

Engineering measures: Use only with adequate ventilation. If user operations generate dust, fumes, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Personal protection
Eyes: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. Recommended: face shield.

Skin: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Body: Recommended: safety apron and gloves.

Respiratory: Use a properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Recommended: Vapor respirator. Be sure to use an approved/certified respirator or equivalent.
**Section 9. Physical and Chemical Properties**

**Physical state**: Solid. (Crystalline powder)

**Color**: Dark Green

**Odor**: Odorless.

**Molecular formula**: C_{25}H_{30}N_{3}Cl

**Boiling/condensation point**: Decomposition temperature: 215°C (419°F)

**Melting/freezing point**: 419.8°C (787.6°F) based on data for: Zinc.

**Relative density**: The only known value is 7.14 (Water = 1) (Zinc).

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**Section 10. Stability and Reactivity**

**Stability and reactivity**: The product is stable.

**Incompatibility with various substances**: Reactive or incompatible with the following materials: oxidizing materials, acids, alkalis and moisture.

**Hazardous decomposition products**: These products are CO_{x}, NO_{x}, HCl

**Hazardous polymerization**: Will not occur.

**Conditions of reactivity**: Highly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge, heat, shocks and mechanical impacts and oxidizing materials. Highly explosive in the presence of the following materials or conditions: open flames, sparks and static discharge and shocks and mechanical impacts. Explosive in the presence of the following materials or conditions: heat. Dust can combine with air to form an explosive mixture Thermal decomposition may release toxic and/or hazardous gases.

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**Section 11. Toxicological Information**

**Toxicity data**

- **United States**

<table>
<thead>
<tr>
<th>Test</th>
<th>Result</th>
<th>Route</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50</td>
<td>420 mg/kg</td>
<td>Oral</td>
<td>Rat</td>
</tr>
<tr>
<td>LD50</td>
<td>150 mg/kg</td>
<td>Oral</td>
<td>Rabbit</td>
</tr>
<tr>
<td>LD50</td>
<td>96 mg/kg</td>
<td>Oral</td>
<td>Mouse</td>
</tr>
<tr>
<td>LDLo</td>
<td>100 mg/kg</td>
<td>Oral</td>
<td>Guinea pig</td>
</tr>
<tr>
<td>LDLo</td>
<td>100 mg/kg</td>
<td>Oral</td>
<td>Cat</td>
</tr>
<tr>
<td>LDLo</td>
<td>388 mg/kg</td>
<td>Oral</td>
<td>duck</td>
</tr>
</tbody>
</table>

- **Zinc**

  | LD50 | 100 mg/kg | Oral | wild bird species |

**Chronic effects on humans**: CARCINOGENIC EFFECTS: Classified 2 (Reasonably anticipated to be human carcinogens.) by NTP [Michler's Ketone].

Contains material which causes damage to the following organs: skin. Hazardous in case of skin contact (irritant), of ingestion.

**Mutagenic effects**: No known significant effects or critical hazards.

**Teratogenicity / Reproductive toxicity**: No known significant effects or critical hazards.

**Sensitization**: Irritating to mucous membranes.

**Special remarks on other toxic effects on humans**: Irritating to eyes.

**Specific effects**

- **Carcinogenic effects**: Contains material which can cause cancer. Risk of cancer depends on duration and level of exposure.

**Ingestion**: No known significant effects or critical hazards.

**Inhalation**: Irritating to respiratory system.

**Skin**: Irritating to skin.

**Section 12. Ecological Information**

**Ecotoxicity data**

- **United States**

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Species</th>
<th>Period</th>
<th>Result</th>
</tr>
</thead>
</table>

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http://www.emdchemicals.com/analytics/doc/msds/MSDSU_192.htm

6/6/2008
Section 13. Disposal Considerations

**Waste disposal**

The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

The information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

Section 14. Transport Information

**Regulatory information**

<table>
<thead>
<tr>
<th>DOT Classification</th>
<th>UN number</th>
<th>Proper shipping name</th>
<th>Class</th>
<th>PG*</th>
<th>Label</th>
<th>Additional information</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>UN2811</td>
<td>Toxic Liquids, Organic, N.O.S. (Gentian Violet)</td>
<td>6.1</td>
<td>III</td>
<td>Not available.</td>
<td></td>
</tr>
</tbody>
</table>

**DOT Classification**

*PG* : Packing group

Section 15. Regulatory Information

**United States**

**HCS Classification**

- Toxic material
- Irritating material
- Carcinogen
- Target organ effects

**U.S. Federal regulations**

- TSCA 8(b) inventory: Listed
- SARA 302/304/311/312 extremely hazardous substances: No products were found.
- SARA 302/304 emergency planning and notification: No products were found.
- SARA 302/304/311/312 hazardous chemicals: Zinc; Crystal Violet
- SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Zinc; Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard; Crystal Violet: Immediate (acute) health hazard, Delayed (chronic) health hazard
- Clean Water Act (CWA) 307: Zinc
- Clean Water Act (CWA) 311: No products were found.
- Clean Air Act (CAA) 112 accidental release prevention: No products were found.
- Clean Air Act (CAA) 112 regulated flammable substances: No products were found.
- Clean Air Act (CAA) 112 regulated toxic substances: No products were found.

**SARA 313**

<table>
<thead>
<tr>
<th>Form R - Reporting requirements</th>
<th>Product name</th>
<th>CAS number</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zinc</td>
<td>7440-66-6</td>
<td>0 - 5</td>
<td></td>
</tr>
<tr>
<td>Michler's Ketone</td>
<td>90-94-8</td>
<td>0.2</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Supplier notification</th>
<th>Product name</th>
<th>CAS number</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zinc</td>
<td>7440-66-6</td>
<td>0 - 5</td>
<td></td>
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<td>Michler's Ketone</td>
<td>90-94-8</td>
<td>0.2</td>
<td></td>
</tr>
</tbody>
</table>

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

**State regulations**

- Pennsylvania RTK: Zinc: (environmental hazard, generic environmental hazard); Michler's Ketone: (special hazard, environmental hazard, generic environmental hazard)
Massachusetts RTK: Zinc ; Michler's Ketone
New Jersey: Crystal Violet

WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>Cancer</th>
<th>Reproductive</th>
<th>No significant risk level</th>
<th>Maximum acceptable dosage level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Michler's Ketone</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

Canada
WHMIS (Canada) : Class D-1A: Material causing immediate and serious toxic effects (Very toxic).
CEPA DSL/CEPA NDSL : CEPA DSL: Zinc ; Crystal Violet

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

EU regulations

Hazard : R22- Harmful if swallowed.
Safety phrases : S2- Keep out of the reach of children.

International regulations

International lists :
Australia (NICNAS): Zinc ; Michler's Ketone ; Crystal Violet
China: Zinc ; Michler's Ketone ; Crystal Violet
Germany water class: Zinc
Japan (METI): Michler's Ketone ; Crystal Violet
Korea (TCCL): Zinc ; Michler's Ketone ; Crystal Violet
Philippines (RA6969): Zinc ; Michler's Ketone ; Crystal Violet

Section 16. Other Information

Label requirements :
WARNING!
CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION.
HARMFUL IF INHALED.
MAY BE HARMFUL IF SWALLOWED.
CONTAINS MATERIAL WHICH CAN CAUSE CANCER.
CONTAINS MATERIAL WHICH MAY CAUSE DAMAGE TO THE FOLLOWING ORGANS: SKIN.
WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

National Fire Protection Association (U.S.A.)

<table>
<thead>
<tr>
<th>Health</th>
<th>Flammability</th>
<th>Instability</th>
<th>Special</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Notice to reader

The statements contained herein are based upon technical data that EMD Chemicals Inc. believes to be reliable, are offered for information purposes only and as a guide to the appropriate precautionary and emergency handling of the material by a properly trained person having the necessary technical skills. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use, storage and disposal of these materials and the safety and health of employees and customers and the protection of the environment. EMD CHEMICALS INC. MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE, WITH RESPECT TO THE INFORMATION HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS.