SAFETY DATA SHEET

1. Identification

Product identifier CAIROX® potassium permanganate
Other means of identification -
SDS number -
Recommended use Potassium Permanganate is an oxidant recommended for applications that require a strong oxidant.
Recommended restrictions Use in accordance with supplier's recommendations.

Manufacturer/Importer/Supplier/Distributor information
Manufacturer: CARUS CORPORATION
Supplier/Distributor: Chemical Store Inc.
1059 Main Avenue, Clifton, New Jersey 07011, USA
Telephone 973-405-6248
E-mail sales@ChemicalStore.com
Website www.ChemicalStore.com

Emergency Telephone For Hazardous Materials [or Dangerous Goods] Incidents ONLY (spill, leak, fire, exposure or accident), call CHEMTREC at CHEMTREC®, USA: 001 (800) 424-9300
CHEMTREC®, Mexico (Toll-Free - must be dialed from within country): 01-800-681-9531
CHEMTREC®, Other countries: 001 (703) 527-3887

2. Hazard(s) identification

Physical hazards Oxidizing solids Category 2
Health hazards Acute toxicity, oral Category 4
Skin corrosion/irritation Category 1B
Serious eye damage/eye irritation Category 1
Specific target organ toxicity, single exposure Category 1 (Respiratory System)
Specific target organ toxicity, repeated exposure Category 1 (Respiratory System, Central Nervous System)

Environmental hazards Hazardous to the aquatic environment, acute hazard Category 1
Hazardous to the aquatic environment, long-term hazard Category 1

OSHA defined hazards Not classified.

Label elements

Signal word Danger

Hazard statement May intensify fire; oxidizer. Harmful if swallowed. Causes severe skin burns and eye damage. Causes damage to organs (Respiratory System). Causes damage to organs (Respiratory System, Central Nervous System) through prolonged or repeated exposure. Very toxic to aquatic life with long lasting effects.

Precautionary statement
Prevention Keep away from heat. Keep/Store away from clothing and other combustible materials. Take any precaution to avoid mixing with combustibles. Do not breathe dust. Wash thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection. Do not eat, drink or smoke when using this product. Avoid release to the environment.
Response

In case of fire: Use water for extinction. If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If inhaled: Remove person to fresh air and keep comfortable for breathing. Immediately call a poison center/doctor. If exposed: Call a poison center/doctor. Collect spillage.

Storage

Store locked up.

Disposal

Dispose of contents/container in accordance with local/regional/national/international regulations.

3. Composition/information on ingredients

Substances

Chemical name | Common name and synonyms | CAS number | %
--- | --- | --- | ---
Potassium permanganate |  | 7722-64-7 | > 97.5

Composition comments

All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

Inhalation

Remove victim to fresh air and keep at rest in a position comfortable for breathing. For breathing difficulties, oxygen may be necessary. Get medical attention immediately.

Skin contact

Take off immediately all contaminated clothing. Immediately flush skin with plenty of water. Get medical attention immediately. Wash contaminated clothing before reuse.

Contact with skin may leave a brown stain of insoluble manganese dioxide. This can be easily removed by washing with a mixture of equal volume of household vinegar and 3% hydrogen peroxide, followed by washing with soap and water.

Eye contact

Immediately flush with plenty of water for up to 15 minutes. Remove any contact lenses and open eyelids wide apart. Continue rinsing. Get medical attention immediately.

Ingestion

Immediately rinse mouth and drink plenty of water. Never give anything by mouth to a victim who is unconscious or is having convulsions. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Get medical attention immediately.

Most important symptoms/effects, acute and delayed

Contact with this material will cause burns to the skin, eyes and mucous membranes. Permanent eye damage including blindness could result.

Indication of immediate medical attention and special treatment needed

Provide general supportive measures and treat symptomatically. In case of shortness of breath, give oxygen. Decomposition products are alkaline. Brown stain is insoluble manganese dioxide.

General information

In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. For personal protection, see Section 8 of the SDS. Wash contaminated clothing before reuse.

5. Fire-fighting measures

Suitable extinguishing media

Flood with water from a distance, water spray or fog.

 Unsuitable extinguishing media

The following extinguishing media are ineffective: Dry chemical. Foam. Carbon dioxide (CO2). Halogenated materials.

Specific hazards arising from the chemical

May intensify fire: oxidizer. May ignite combustibles (wood, paper, oil, clothing, etc.). Contact with incompatible materials or heat (135 °C / 275 °F) could result in violent exothermic chemical reaction. Oxidizing agent, may cause spontaneous ignition of combustible materials. By heating and fire, corrosive vapors/gases may be formed.

Special protective equipment and precautions for firefighters

Self-contained breathing apparatus and full protective clothing must be worn in case of fire. Selection of respiratory protection for firefighting: follow the general fire precautions indicated in the workplace.

Fire-fighting equipment/instructions

Move container from fire area if it can be done without risk. Cool containers exposed to flames with water until well after the fire is out. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Dike fire control water for later disposal. Water runoff can cause environmental damage.

General fire hazards

The product is not flammable. May intensify fire: oxidizer. May ignite combustibles (wood, paper, oil, clothing, etc.). Contact with incompatible materials or heat (135 °C / 275 °F) could result in violent exothermic chemical reaction.
6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Keep unnecessary personnel away. Keep upwind. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Avoid inhalation of vapors and contact with skin and eyes. Wear protective clothing as described in Section 8 of this safety data sheet. Local authorities should be advised if significant spillages cannot be contained.

Methods and materials for containment and cleaning up

Keep combustibles (wood, paper, oil, etc.) away from spilled material. Should not be released into the environment. This product is miscible in water. Stop leak if possible without any risk. Dike the spilled material, where this is possible. Clean up spills immediately by sweeping or shoveling up the material. Do not return spilled material to the original container; transfer to a clean metal or plastic drum. To clean up potassium permanganate solutions, follow either of the following two options:

Option # 1: Dilute to approximately 6% with water, and then reduce with sodium thiosulfate, a bisulfite or ferrous salt solution. The bisulfite or ferrous salt may require some dilute sulfuric acid (10% w/w) to promote reduction. Neutralize with sodium carbonate to neutral pH, if acid was used. Decant or filter and deposit sludge in approved landfill. Where permitted, the sludge may be drained into sewer with large quantities of water.

Option # 2: Absorb with inert media like diatomaceous earth or inert floor dry, collect into a drum and dispose of properly. Do not use saw dust or other incompatible media. Disposal of all materials shall be in full and strict compliance with all federal, state, and local regulations pertaining to permanganates.

Environmental precautions

Never return spills in original containers for re-use. For waste disposal, see Section 13 of the SDS.

7. Handling and storage

Precautions for safe handling

Take any precaution to avoid mixing with combustibles. Do not get this material in your eyes, on your skin, or on your clothing. Do not breathe dust or mist or vapor of the solution. Use personal protection as recommended in Section 8 of the SDS. If clothing becomes contaminated, remove and wash off immediately. When using, do not eat, drink or smoke. Good personal hygiene is necessary. Wash hands and contaminated areas with water and soap before leaving the work site. Avoid release to the environment.

Conditions for safe storage, including any incompatibilities

Store locked up. Keep container tightly closed and in a well-ventilated place. Store in a cool, dry place. Store away from incompatible materials (See Section 10). Store in accordance with NFPA 430 requirements for Class II oxidizers.

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium permanganate</td>
<td>Ceiling</td>
<td>5 mg/m³</td>
</tr>
</tbody>
</table>

US. ACGIH Threshold Limit Values

<table>
<thead>
<tr>
<th>Material</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAIROX® potassium permanganate</td>
<td>TWA</td>
<td>0.1 mg/m³</td>
<td>Inhalable fraction.</td>
</tr>
<tr>
<td>Components</td>
<td></td>
<td>0.02 mg/m³</td>
<td>Respirable fraction.</td>
</tr>
<tr>
<td>Potassium permanganate</td>
<td>TWA</td>
<td>0.1 mg/m³</td>
<td>Inhalable fraction.</td>
</tr>
<tr>
<td>(CAS 7722-64-7)</td>
<td></td>
<td>0.02 mg/m³</td>
<td>Respirable fraction.</td>
</tr>
</tbody>
</table>

US. NIOSH: Pocket Guide to Chemical Hazards

<table>
<thead>
<tr>
<th>Material</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAIROX® potassium permanganate</td>
<td>TWA</td>
<td>1 mg/m³</td>
<td>Fume.</td>
</tr>
<tr>
<td>Components</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potassium permanganate</td>
<td>STEL</td>
<td>3 mg/m³</td>
<td>Fume.</td>
</tr>
<tr>
<td>(CAS 7722-64-7)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TWA</td>
<td></td>
<td>1 mg/m³</td>
<td>Fume.</td>
</tr>
</tbody>
</table>

Biological limit values

No biological exposure limits noted for the ingredient(s).
Exposure guidelines
Follow standard monitoring procedures.

Appropriate engineering controls
Provide adequate general and local exhaust ventilation. An eye wash and safety shower must be available in the immediate work area.

Individual protection measures, such as personal protective equipment

Eye/face protection
Wear safety glasses with side shields (or goggles). Wear face shield if there is risk of splashes.

Skin protection

Hand protection
Wear chemical-resistant, impervious gloves. Use protective gloves made of: Rubber or plastic. Suitable gloves can be recommended by the glove supplier.

Other
Wear appropriate chemical resistant clothing. Rubber or plastic apron.

Respiratory protection
In case of inadequate ventilation or risk of inhalation of dust, use suitable respiratory equipment with particle filter. In the United States of America, if respirators are used, a program should be instituted to assure compliance with OSHA 29 CFR 1910.134.

Measurement Element: Manganese (Mn)

10 mg/m³
Any particulate respirator equipped with an N95, R95, or P95 filter (including N95, R95, and P95 filtering facepieces) except quarter-mask respirators. The following filters may also be used: N99, R99, P99, N100, R100 or P100.
Any supplied-air respirator.

25 mg/m³
Any supplied-air respirator operated in a continuous-flow mode.
Any powered, air-purifying respirator with a high-efficiency particulate filter.

50 mg/m³
Any air-purifying, full-face piece respirator equipped with an N100, R100, or P100 filter.
Any supplied-air respirator with a tight-fitting face piece that is operated in a continuous-flow mode.
Any powered, air-purifying respirator with a tight-fitting face piece and a high-efficiency particulate filter.
Any self-contained breathing apparatus with a full face piece.
Any supplied-air respirator with a full face piece.

500 mg/m³
Any supplied-air respirator operated in a pressure-demand or other positive-pressure mode.

Emergency or planned entry into unknown concentrations or IDLH conditions -
Any self-contained breathing apparatus that has a full face piece and is operated in a pressure-demand or other positive-pressure mode.

Escape
Any air-purifying, full-face piece respirator equipped with an N100, R100, or P100 filter.
Any appropriate escape-type, self-contained breathing apparatus.

Thermal hazards
Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations
When using, do not eat, drink or smoke. Keep from contact with clothing and other combustible materials. Remove and wash contaminated clothing promptly. Wash hands before breaks and immediately after handling the product. Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Appearance
Dark purple solid with metallic luster.

Physical state
Solid.

Form
Solid.

Color
Dark purple.

Odor
Odorless.

Odor threshold
Not available.

pH
Not applicable.

Melting point/freezing point
Starts to decompose with evolution of oxygen (O2) at temperatures above 150 °C. Once initiated, the decomposition is exothermic and self sustaining.

Initial boiling point and boiling range
Not applicable.

Flash point
Not applicable.

Evaporation rate
Not applicable.

Flammability (solid, gas)
Non flammable.

Upper/lower flammability or explosive limits

Flammability limit - lower (%)
Not applicable.
Flammability limit - upper (%) Not applicable.
Explosive limit - lower (%) Not available.
Explosive limit - upper (%) Not available.
Vapor pressure < 0 kPa at 25 °C Not applicable.
Vapor density Not applicable.
Relative density 2.7 (20 °C) (Water = 1)
Solubility(ies)
Solubility (water) 6 % (20 °C)
Partition coefficient (n-octanol/water) Not available.
Auto-ignition temperature Not available.
Decomposition temperature 464 °F (240 °C)
Viscosity Not applicable.
Other information
Density 2.70 g/cm3
Explosive properties Not explosive. Can explode in contact with sulfuric acid, peroxides and metal powders.
Molecular formula H-Mn-O4.K
Molecular weight 158.03 g/mol
158.03
Oxidizing properties Strong oxidizing agent.

10. Stability and reactivity
Reactivity The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability Stable at normal conditions.
Possibility of hazardous reactions Contact with combustible material may cause fire. Can explode in contact with sulfuric acid, peroxides and metal powders. Starts to decompose with evolution of oxygen (O2) at temperatures above 150 °C. Once initiated, the decomposition is exothermic and self sustaining.
Conditions to avoid Contact with incompatible materials or heat (135 °C / 275 °F) could result in violent exothermic chemical reaction.
Hazardous decomposition products By heating and fire, corrosive vapors/gases may be formed.

11. Toxicological information
Information on likely routes of exposure
Ingestion Harmful if swallowed.
Inhalation May cause irritation to the respiratory system.
Skin contact Causes severe skin burns.
Eye contact Causes serious eye damage.
Symptoms related to the physical, chemical and toxicological characteristics Contact with this material will cause burns to the skin, eyes and mucous membranes. Permanent eye damage including blindness could result.
Information on toxicological effects
Acute toxicity Harmful if swallowed.

<table>
<thead>
<tr>
<th>Components</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium permanganate (CAS 7722-64-7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dermal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rat</td>
<td>2000 mg/kg</td>
</tr>
<tr>
<td>Oral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rat</td>
<td>2000 mg/kg</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Causes severe skin burns.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serious eye damage/eye irritation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Causes serious eye damage.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
10. Respiratory or skin sensitization
   - Respiratory sensitization: Not classified.
   - Skin sensitization: Not classified.
   - Germ cell mutagenicity: Not classified.
   - Carcinogenicity: Not classified.
   - Reproductive toxicity: Not classified.

11. Specific target organ toxicity
   - Specific target organ toxicity - single exposure: Causes damage to organs (respiratory system).
   - Specific target organ toxicity - repeated exposure: Causes damage to organs (respiratory system, central nervous system) through prolonged or repeated exposure.
   - Aspiration hazard: Not classified.

12. Chronic effects
   - May cause damage to the respiratory system. Prolonged exposure, usually over many years, to manganese oxide fume/dust can lead to chronic manganese poisoning, chiefly affecting the central nervous system.

13. Ecological information
   - Ecotoxicity: Very toxic to aquatic life with long lasting effects.

<table>
<thead>
<tr>
<th>Components</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium permanganate (CAS 7722-64-7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Aquatic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fish</td>
<td>LC50</td>
<td></td>
</tr>
<tr>
<td>Bluegill (Lepomis macrochirus)</td>
<td>2.7 mg/l, 96 hours, static</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.3 mg/l, 96 hours, flow through</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.3 mg/l, 96 hours</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.8 - 5.6 mg/l</td>
<td></td>
</tr>
<tr>
<td>Carp (Cyprinus carpio)</td>
<td>3.16 - 3.77 mg/l, 96 hours</td>
<td></td>
</tr>
<tr>
<td>Goldfish (Carassius auratus)</td>
<td>2.97 - 3.11 mg/l, 96 hours</td>
<td></td>
</tr>
<tr>
<td>Milkfish, salmon-herring (Chanos chanos)</td>
<td>&gt; 1.4 mg/l, 96 hours</td>
<td></td>
</tr>
<tr>
<td>Rainbow trout (Oncorhynchus mykiss)</td>
<td>1.8 mg/l, 96 hours</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.08 - 1.38 mg/l, 96 hours</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.77 - 1.27 mg/l, 96 hours</td>
<td></td>
</tr>
<tr>
<td>Rainbow trout, donaldson trout</td>
<td>0.275 - 0.339 mg/l, 96 hours</td>
<td></td>
</tr>
</tbody>
</table>

14. Transport information
   - DOT
     - UN number: UN1490
     - UN proper shipping name: Potassium permanganate
     - Transport hazard class(es):
       - Class: 5.1
       - Subsidiary risk: -
       - Packing group: II

Persistence and degradability: Expected to be readily converted by oxidizable materials to insoluble manganese oxide.

Bioaccumulative potential: Potential to bioaccumulate is low.

Mobility in soil: The product is miscible with water. May spread in water systems.

Other adverse effects: None known.

15. Disposal considerations
   - Disposal instructions: Dispose of contents/container in accordance with local/regional/national/international regulations.
   - Hazardous waste code: D001: Ignitible waste
     - The Waste code should be assigned in discussion between the user, the producer and the waste disposal company.
   - Waste from residues / unused products: Do not allow this material to drain into sewers/water supplies.
   - Contaminated packaging: Since emptied containers may retain product residue, follow label warnings even after container is emptied. Rinse container at least three times to an absence of pink color before disposing. Empty containers should be taken to an approved waste handling site for recycling or disposal.
15. Regulatory information

**US federal regulations**
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200. All components are on the U.S. EPA TSCA Inventory List.

Drug Enforcement Administration (DEA) (21 CFR 1310.02 (b) 8: List II chemical.


**TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)**
Not regulated.

Not listed.

**CERCLA Hazardous Substance List (40 CFR 302.4)**
Potassium permanganate (CAS 7722-64-7) LISTED

**Superfund Amendments and Reauthorization Act of 1986 (SARA)**

**Hazard categories**
Immediate Hazard - Yes
Delayed Hazard - Yes
Fire Hazard - Yes
Pressure Hazard - No
Reactivity Hazard - No

**SARA 302 Extremely hazardous substance**
Not listed.

**SARA 311/312 Hazardous chemical**
Yes

**SARA 313 (TRI reporting)**

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS number</th>
<th>% by wt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium permanganate</td>
<td>7722-64-7</td>
<td>&gt; 97.5</td>
</tr>
</tbody>
</table>
Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
Potassium permanganate (CAS 7722-64-7)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)
Not regulated.

Clean Water Act (CWA) Section 112(r) (40 CFR 68.130)
Hazardous substance

Safe Drinking Water Act (SDWA)
Not regulated.

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number
Potassium permanganate (CAS 7722-64-7) 6579

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))
Potassium permanganate (CAS 7722-64-7) 15 % wt

DEA Exempt Chemical Mixtures Code Number
Potassium permanganate (CAS 7722-64-7) 6579

US state regulations
Not regulated.

US. Massachusetts RTK - Substance List
Potassium permanganate (CAS 7722-64-7)

US. New Jersey Worker and Community Right-to-Know Act
Potassium permanganate (CAS 7722-64-7)

US. Pennsylvania Worker and Community Right-to-Know Law
Potassium permanganate (CAS 7722-64-7)

US. Rhode Island RTK
Potassium permanganate (CAS 7722-64-7)

US. California Proposition 65

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

International Inventories

<table>
<thead>
<tr>
<th>Country(s) or region</th>
<th>Inventory name</th>
<th>On inventory (yes/no)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Australian Inventory of Chemical Substances (AICS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Domestic Substances List (DSL)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Non-Domestic Substances List (NDSL)</td>
<td>No</td>
</tr>
<tr>
<td>China</td>
<td>Inventory of Existing Chemical Substances in China (IECSC)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European Inventory of Existing Commercial Chemical Substances (EINECS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European List of Notified Chemical Substances (ELINCS)</td>
<td>No</td>
</tr>
<tr>
<td>Japan</td>
<td>Inventory of Existing and New Chemical Substances (ENCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Korea</td>
<td>Existing Chemicals List (ECL)</td>
<td>Yes</td>
</tr>
<tr>
<td>New Zealand</td>
<td>New Zealand Inventory</td>
<td>Yes</td>
</tr>
<tr>
<td>Philippines</td>
<td>Philippine Inventory of Chemicals and Chemical Substances (PICCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>United States &amp; Puerto Rico</td>
<td>Toxic Substances Control Act (TSCA) Inventory</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*“Yes” indicates this product complies with the inventory requirements administered by the governing country(s). A “No” indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date          27-November-2013
Revision date       23-April-2014
Version #           02
Further information HMIS® is a registered trade and service mark of the NPCA.
List of abbreviations

GHS: Globally Harmonized System of Classification and Labeling of hazardous properties of Chemicals.
TWA: Time weighted average.
LD50: Lethal Dose, 50%.
LC50: Lethal Concentration, 50%.
IMDG: International Maritime Dangerous Goods.
IATA: International Air Transport Association.

References

HSDB® - Hazardous Substances Data Bank
Registry of Toxic Effects of Chemical Substances (RTECS)
IARC Monographs. Overall Evaluation of Carcinogenicity
National Toxicology Program (NTP) Report on Carcinogens
ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices

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This SDS contains revisions in the following section(s):

This safety data sheet contains revisions in the following section(s):