Material Safety Data Sheet

Material Name: Trichrome Mordant

***** Section 1 - Chemical Product and Company Identification *****

Manufacturer Information
VENTANA MEDICAL SYSTEMS INC.
1910 E. Innovation Park Drive
Tucson, AZ 85755
Phone: (520) 887-2155

EMERGENCY TELEPHONE NUMBER:
(800) 424-9300 (USA/Canada)
CHEMTREC: +1 (703) 527-3887 (International)

Material Name: Trichrome Mordant
Product Number(s)
1504644, 06521185001, 860-031, 06521908001

Product Use
clinical

***** Section 2 - Hazards Identification *****

NFPA Ratings: Health: 3 Fire: 0 Reactivity: 0
Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Preparation
C; R:35

Risks
Causes severe burns.

EMERGENCY OVERVIEW

Physical Form: liquid
Major Health Hazards: respiratory tract burns, skin burns, eye burns, mucous membrane burns

POTENTIAL HEALTH EFFECTS

Inhalation
Short Term: burns
Long Term: burns

Skin
Short Term: burns
Long Term: burns

Eye
Short Term: burns
Long Term: burns

Ingestion
Short Term: burns
Long Term: burns

OSHA Regulatory Status
This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

***** Section 3 - Composition/Information on Ingredients *****

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Component / EU Number</th>
<th>Percent</th>
<th>Symbol(s)</th>
<th>Risk Phrase(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Available</td>
<td>Non-hazardous</td>
<td>60-100</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>51429-74-4</td>
<td>Phosphomolybdic acid hydrate</td>
<td>1-5</td>
<td>O C</td>
<td>R:8-34</td>
</tr>
<tr>
<td>12501-23-4</td>
<td>Phosphotungstic acid hydrate</td>
<td>0.1-1</td>
<td>C</td>
<td>R:34</td>
</tr>
</tbody>
</table>
Material Safety Data Sheet

Material Name: Trichrome Mordant

Component Related Regulatory Information
This product may be regulated, have exposure limits or other information identified as the following: Molybdenum compounds, n.o.s., Tungsten compounds, n.o.s.

*** Section 4 - First Aid Measures ***

Inhalation
If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

Skin
Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get immediate medical attention. Thoroughly clean and dry contaminated clothing before reuse. Destroy contaminated shoes.

Eyes
Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

Ingestion
If swallowed, drink plenty of water, do NOT induce vomiting. Get immediate medical attention.

Note to Physicians
For inhalation, consider oxygen.
Avoid gastric lavage or emesis.

*** Section 5 - Fire-Fighting Measures ***

See Section 9 for Flammability Properties

Flammable Properties
Negligible fire hazard.

Extinguishing Media
water spray

Protective Equipment and Precautions for Firefighters
Wear full protective fire fighting gear including self contained breathing apparatus (SCBA) for protection against possible exposure.

Fire Fighting Measures
Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Do not get water directly on material. Avoid inhalation of material or combustion by-products.

Sensitivity to Mechanical Impact
Not sensitive

Sensitivity to Static Discharge
Not sensitive

*** Section 6 - Accidental Release Measures ***

Occupational Spill/Release
Do not touch spilled material. Stop leak if possible without personal risk. Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal. Keep unnecessary people away, isolate hazard area and deny entry.

*** Section 7 - Handling and Storage ***

Handling Procedures
Wash thoroughly after handling. Avoid contact with eyes, skin and clothing.

Storage Procedures
Store and handle in accordance with all current regulations and standards. Keep separated from incompatible substances.
**Section 8 - Exposure Controls/Personal Protection**

Exposure Limits

- **Phosphomolybdic acid hydrate (51429-74-4)**
  - Ireland: 0.5 mg/m³ TWA (as Mo, related to Molybdenum compounds, n.o.s.)
- **Phosphotungstic acid hydrate (12501-23-4)**
  - United Kingdom: 10 mg/m³ STEL (as W, related to Tungsten compounds, n.o.s.)
  - 5 mg/m³ TWA (as W, related to Tungsten compounds, n.o.s.)

Ventilation

- Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

**PERSONAL PROTECTIVE EQUIPMENT**

**Eyes/Face**

- Safety glasses or goggles are recommended when there is a potential for eye contact. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

**Protective Clothing**

- Lab coat or apron.

**Glove Recommendations**

- Wear appropriate chemical resistant gloves.

**Respiratory Protection**

- No respirator is required under normal conditions of use.

**Section 9 - Physical and Chemical Properties**

<table>
<thead>
<tr>
<th>Physical State:</th>
<th>Liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form:</td>
<td>liquid</td>
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<tr>
<td>Odor Threshold:</td>
<td>Not available</td>
</tr>
<tr>
<td>Melting/Freezing Point:</td>
<td>Not available</td>
</tr>
<tr>
<td>Decomposition:</td>
<td>Not available</td>
</tr>
<tr>
<td>Evaporation Rate:</td>
<td>Not available</td>
</tr>
<tr>
<td>UEL:</td>
<td>Not available</td>
</tr>
<tr>
<td>Vapor Density (air = 1):</td>
<td>Not available</td>
</tr>
<tr>
<td>Specific Gravity (water = 1):</td>
<td>Not available</td>
</tr>
<tr>
<td>Log KOW:</td>
<td>Not available</td>
</tr>
<tr>
<td>Auto Ignition:</td>
<td>Not available</td>
</tr>
<tr>
<td>Volatility:</td>
<td>Not available</td>
</tr>
<tr>
<td>Appearance:</td>
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<td>Odor:</td>
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<td>pH:</td>
<td>1.86</td>
</tr>
<tr>
<td>Boiling Point:</td>
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<tr>
<td>Flash Point:</td>
<td>Not available</td>
</tr>
<tr>
<td>LEL:</td>
<td>Not available</td>
</tr>
<tr>
<td>Vapor Pressure:</td>
<td>Not available</td>
</tr>
<tr>
<td>Density:</td>
<td>1.001 g/mL</td>
</tr>
<tr>
<td>Water Solubility:</td>
<td>Not available</td>
</tr>
<tr>
<td>Coeff. Water/Oil Dist.:</td>
<td>Not available</td>
</tr>
<tr>
<td>Viscosity:</td>
<td>Not available</td>
</tr>
</tbody>
</table>

**Section 10 - Stability and Reactivity**

**Chemical Stability**

- Stable at normal temperatures and pressure.

**Conditions to Avoid**

- None known.

**Materials to Avoid**

- Metals, reducing agents

**Decomposition Products**

- Oxides of molybdenum, oxides of phosphorus, oxides of tungsten

**Possibility of Hazardous Reactions**

- Will not polymerize.

**Section 11 - Toxicological Information**

**Acute and Chronic Toxicity**

**Component Analysis - LD50/LC50**

- The components of this material have been reviewed in various sources and no selected endpoints have been identified.
RTECS Acute Toxicity (selected)
The components of this material have been reviewed and RTECS publishes no data as of the date on this document.

Irritation/Corrosivity
respiratory tract burns, skin burns, eye burns, mucous membrane burns

RTECS Irritation
The components of this material have been reviewed and RTECS publishes no data as of the date on this document.

Local Effects
Phosphomolybdic acid hydrate (51429-74-4)
Corrosive: inhalation, skin, eye, ingestion
Phosphotungstic acid hydrate (12501-23-4)
Corrosive: inhalation, skin, eye, ingestion

Carcinogenicity
Component Carcinogenicity
None of the substances in this preparation are listed by ACGIH, OSHA, NIOSH, NTP, IARC, Austria, Belgium, Denmark, France, Germany, Ireland, Italy, Netherlands, Portugal, Spain, Sweden, or United Kingdom.

Mutagenic
No data available for the mixture.

RTECS Mutagenic
The components of this material have been reviewed, and RTECS publishes data for one or more components.

Reproductive Effects
No data available for the mixture.

RTECS Reproductive Effects
The components of this material have been reviewed, and RTECS publishes data for one or more components.

Tumorigenic
No data available for the mixture.

RTECS Tumorigenic
The components of this material have been reviewed, and RTECS publishes data for one or more components.

Medical Conditions Aggravated by Exposure
None known.

*** Section 12 - Ecological Information***

Component Analysis - Aquatic Toxicity
No ecotoxicity data are available for this product's components.

Mobility
No data available for the mixture.

Persistence & Degradation
No data available for the mixture.

Bioaccumulative Potential
No data available for the mixture.

*** Section 13 - Disposal Considerations***

Disposal Methods
Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262.
Hazardous Waste Number(s): D002.

Component Waste Numbers
The U.S. EPA has not published waste numbers for this product's components.

*** Section 14 - Transport Information***

US DOT Information
Shipping Name: Corrosive liquid, acidic, inorganic, n.o.s. (Contains: Phosphomolybdic acid hydrate, Phosphotungstic acid hydrate)
UN/NA #: UN3264  Hazard Class: 8  Packing Group: II
Required Label(s): 8
**Section 15 - Regulatory Information**

**U.S. Federal Regulations**
None of this product’s components are listed under SARA Sections 302/304 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), or CERCLA (40 CFR 302.4), TSCA 12(b), or require an OSHA process safety plan.

**SARA 311/312**
- **Acute Health**: Yes
- **Chronic Health**: No
- **Fire**: No
- **Pressure**: No
- **Reactive**: No

**U.S. State Regulations**
The following components appear on one or more of the following state hazardous substances lists:

<table>
<thead>
<tr>
<th>Component / EC Number</th>
<th>CAS</th>
<th>CA</th>
<th>MA</th>
<th>MN</th>
<th>NJ</th>
<th>PA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphomolybdic acid hydrate (<em>related to: Molybdenum compounds, n.o.s.</em>)</td>
<td>51429-74-4</td>
<td>Yes¹</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Phosphotungstic acid hydrate (<em>related to: Tungsten compounds, n.o.s.</em>)</td>
<td>12501-23-4</td>
<td>Yes¹</td>
<td>No</td>
<td>Yes¹</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

**California Proposition 65**
Not regulated under California Proposition 65
Material Safety Data Sheet

Material Name: Trichrome Mordant

Canadian Regulations
This product has been classified in accordance with the criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

Canada WHMIS
The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

- Phosphomolybdic acid hydrate (51429-74-4) 1% (related to Molybdenum compounds, n.o.s.)
- Phosphotungstic acid hydrate (12501-23-4) 1% (related to Tungsten compounds, n.o.s.)

WHMIS Classification
E.

European Regulations
This preparation has been classified for the European Union according to Annex VI Directives 67/548/EEC and 99/45/EC.

EU Marking and Labelling
Symbols
C Corrosive

Risk Phrases
R35 Causes severe burns.

Safety Phrases
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S60 This material and its container must be disposed of as hazardous waste.

Japanese Regulations
Japan Designated Chemical Substances (PRTR Law)
The following components are subject to reporting requirements as specified by the "Law Concerning Reporting, etc. of Releases to the Environment of Specific Chemical Substances and Promoting Improvements in Their Management" and are included in the "Pollutant Release and Transfer Register (PRTR)" of designated chemicals.

- Phosphomolybdic acid hydrate (51429-74-4) 453 >=1 % (related to Molybdenum compounds, n.o.s.)

Japan Poisonous and Deleterious Substances
No components of this material are specified as poisonous or deleterious substances, as regulated by Japan under the Poisonous and Deleterious Substances Control Law.

Industrial Safety and Health Law - Flammable Materials
No components of this material are specifically identified in Table 6-2 of the Enforcement Order of the Industrial Safety and Health Law which, if used in the workplace, require designation of an Operations Chief during confined space work and periodic machine inspections.

Industrial Safety and Health Law - Label Disclosure
No components of this material are specifically required to be indicated on a container label as specified by Article 18 of the Enforcement Order of the Industrial Safety and Health Law.

Industrial Safety and Health Law - Organic Solvents
No components of this material are specifically identified in Table 6-2 of the Enforcement Order of the Industrial Safety and Health Law which, if used in the workplace, require designation of an Operations Chief during confined space work and periodic machine inspections.
**Section 16 - Other Information**

**Key / Legend**

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; LOLI - List Of Lists™ - ChemADVISOR’s Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH - Philippines; RCRA - Resource Conservation and Recovery Act; RID - European Rail Transport; RTECS - Registry of Toxic Effects of Chemical Substances®; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States

**Full text of R phrases in Section 3**

R8 Contact with combustible material may cause fire.
R34 Causes burns.

**Other Information**

Limitations: The information and recommendations set forth in this MSDS are believed to be correct as of this date. Ventana Medical Systems, Inc. makes no warranty with respect to the content of this MSDS and disclaims all liability from reliance thereon.

**New MSDS:** 10/13/2011