1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY INFORMATION

Catalog Number: 67800

Product Name: GOLD COLLOID 5 nm

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>WATER</td>
<td>7732-18-5</td>
<td>90 - 100%</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>POTASSIUM CARBONATE ANHYDROUS</td>
<td>584-08-7</td>
<td>1 - 5%</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>SODIUM CITRATE TRISODIUM</td>
<td>6132-04-3</td>
<td>0.1 - 1.5%</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>SALT DIHYDRATE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SODIUM AZIDE</td>
<td>26628-22-8</td>
<td>&lt; 0.1%</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>GOLD CHLORIDE TRIHYDRATE</td>
<td>16981-25-4</td>
<td>&lt; 0.1%</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: May cause skin irritation and/or dermatitis

Principle routes of exposure: Skin
Inhalation: May cause irritation of respiratory tract
Ingestion: Harmful if swallowed.
Skin contact: May cause allergic skin reaction
Eye contact: Avoid contact with eyes

Statements of hazard HARMFUL IF SWALLOWED. MAY BE HARMFUL IF ABSORBED THROUGH SKIN OR INHALED.
Statement of Spill or Leak - ANSI Label Contain and/or absorb spill with inert material (e.g. sand, vermiculite), then place in suitable container. Do not flush to sewer or allow to enter waterways. Use appropriate Personal Protective Equipment.
Precautions - ANSI Label Do not swallow.

4. FIRST AID MEASURES

General advice: Take off contaminated clothing and shoes immediately.
Inhalation: Consult a physician Move to fresh air
Skin contact: Wash off immediately with plenty of water for at least 15 minutes
Ingestion: Do not induce vomiting without medical advice.
4. FIRST AID MEASURES

Eye contact: In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
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: May explode when heated or shocked. When in contact with metals or metal compounds, it forms metal azides which could be explosive.
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: 1
- NFPA Flammability: 1
- NFPA Reactivity: 0

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Use personal protective equipment.
Environmental precautions: Do not flush into surface water or sanitary sewer system.
Methods for cleaning up: Soak up with inert absorbent material.

7. HANDLING AND STORAGE

Storage:
- +4°C
- DO NOT FREEZE

Handling: Use only in area provided with appropriate exhaust ventilation.
Safe handling advice: Wear personal protective equipment.
Technical measures/storage conditions: Keep containers tightly closed in a cool, well-ventilated place.
Incompatible products: Oxidizing 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 Long sleeved 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>Appearance and Odor</td>
<td>Light burgandy to red</td>
</tr>
<tr>
<td>Physical state</td>
<td>Liquid</td>
</tr>
<tr>
<td>Formula</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Melting point/range</td>
<td>No data available at this time.</td>
</tr>
<tr>
<td>Boiling point/range</td>
<td>No data available at this time.</td>
</tr>
<tr>
<td>Density</td>
<td>~ 1.0 g/ml</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>No data available</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapor density</td>
<td>No data available</td>
</tr>
<tr>
<td>Solubility (in water)</td>
<td>Soluble</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>Nitrogen oxides (NOx)/ammonia/CN-, Sodium oxides (Na2O), Chloride/Hydrochloric acid, Potassium oxides (K2O)</td>
</tr>
<tr>
<td>Materials to avoid</td>
<td>Strong bases, Bases, Strong oxidizing agents, Cyanides, Sulphides, Reducing agents, Magnesium, Potassium carbonates, Chlorine trifluoride, Carbonates, Ammonium hydroxide, -</td>
</tr>
<tr>
<td>Conditions to avoid</td>
<td>Exposure to air or moisture over prolonged periods.</td>
</tr>
</tbody>
</table>

### 11. TOXICOLOGICAL INFORMATION

#### Product Information

<table>
<thead>
<tr>
<th>Component</th>
<th>RTECS Number</th>
<th>Selected LD50s and LC50s</th>
</tr>
</thead>
<tbody>
<tr>
<td>WATER</td>
<td>ZC0110000</td>
<td>Oral LD50 Rat = &gt; 90 ml/kg</td>
</tr>
<tr>
<td>POTASSIUM CARBONATE ANHYDROUS</td>
<td>TS7750000</td>
<td>Oral LD50 Rat : 1870 mg/kg</td>
</tr>
<tr>
<td>SODIUM CITRATE TRISODIUM DIHYDRATE</td>
<td>Not Available</td>
<td>Oral LD50 Mouse : 2570 mg/kg</td>
</tr>
<tr>
<td>SODIUM AZIDE</td>
<td>VY8050000</td>
<td>Oral LD50 Rat : 27 mg/kg</td>
</tr>
<tr>
<td>GOLD CHLORIDE TRIHYDRATE</td>
<td>MD5428000</td>
<td>Oral LD50 Mouse : 27 mg/kg</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<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>
</tbody>
</table>

**NIOSH - Health Effects**

- Hypotension, cardiovascular effects, irritation eyes, skin, CNS, CVS, kidneys
12. ECOLOGICAL INFORMATION

Mobility: No data available
Bioaccumulation: No data available
Ecotoxicity effects: No data available
Aquatic toxicity: May cause long-term adverse effects in the aquatic environment.

Components

**U.S. DOT - Appendix B - Marine Pollutants**
- WATER: Not Listed
- POTASSIUM CARBONATE ANHYDROUS: Not Listed
- SODIUM CITRATE TRISODIUM SALT DIHYDRATE: Not Listed
- SODIUM AZIDE: Not Listed
- GOLD CHLORIDE TRIHYDRATE: Not Listed

**U.S. DOT - Appendix B - Severe Marine Pollutants**
- WATER: Not Listed
- POTASSIUM CARBONATE ANHYDROUS: Not Listed
- SODIUM CITRATE TRISODIUM SALT DIHYDRATE: Not Listed
- SODIUM AZIDE: Not Listed
- GOLD CHLORIDE TRIHYDRATE: Not Listed

**United Kingdom - The Red List:**
- WATER: Not Listed
- POTASSIUM CARBONATE ANHYDROUS: Not Listed
- SODIUM CITRATE TRISODIUM SALT DIHYDRATE: Not Listed
- SODIUM AZIDE: Not Listed
- GOLD CHLORIDE TRIHYDRATE: Not Listed

**Germany VCI (WGK)**
- WATER: Not Listed
- POTASSIUM CARBONATE ANHYDROUS: Not Listed
- SODIUM CITRATE TRISODIUM SALT DIHYDRATE: Not Listed
- SODIUM AZIDE: Not Listed
- GOLD CHLORIDE TRIHYDRATE: Not Listed

**World Health Organization (WHO) - Drinking Water Ecotoxicity - Fish Species Data**
- WATER: Not Listed
- POTASSIUM CARBONATE ANHYDROUS: Not Listed
- SODIUM CITRATE TRISODIUM SALT DIHYDRATE: Not Listed
- SODIUM AZIDE: Not Listed
- GOLD CHLORIDE TRIHYDRATE: Not Listed

**Ecotoxicity - Freshwater Algae Data**
- WATER: Not Listed
- POTASSIUM CARBONATE ANHYDROUS: Not Listed
- SODIUM CITRATE TRISODIUM SALT DIHYDRATE: Not Listed
- SODIUM AZIDE: Not Listed
- GOLD CHLORIDE TRIHYDRATE: Not Listed

**Ecotoxicity - Microtox Data**
- WATER: Not Listed
- POTASSIUM CARBONATE ANHYDROUS: Not Listed
- SODIUM CITRATE TRISODIUM SALT DIHYDRATE: Not Listed
- SODIUM AZIDE: Not Listed
- GOLD CHLORIDE TRIHYDRATE: Not Listed

**Ecotoxicity - Water Flea Data**
- WATER: Not Listed
- POTASSIUM CARBONATE ANHYDROUS: Not Listed
- SODIUM CITRATE TRISODIUM SALT DIHYDRATE: Not Listed
- SODIUM AZIDE: Not Listed
- GOLD CHLORIDE TRIHYDRATE: Not Listed

**EPA - ATSDR Priority List**
- WATER: Not Listed
- POTASSIUM CARBONATE ANHYDROUS: Not Listed
- SODIUM CITRATE TRISODIUM SALT DIHYDRATE: Not Listed
- SODIUM AZIDE: Not Listed
- GOLD CHLORIDE TRIHYDRATE: Not Listed

**EPA - HPV Challenge Program Chemical List**
- WATER: Not Listed
- POTASSIUM CARBONATE ANHYDROUS: Not Listed
- SODIUM CITRATE TRISODIUM SALT DIHYDRATE: Not Listed
- SODIUM AZIDE: Not Listed
- GOLD CHLORIDE TRIHYDRATE: Not Listed

**California - Priority Toxic Pollutants**
- WATER: Not Listed
- POTASSIUM CARBONATE ANHYDROUS: Not Listed
- SODIUM CITRATE TRISODIUM SALT DIHYDRATE: Not Listed
- SODIUM AZIDE: Not Listed
- GOLD CHLORIDE TRIHYDRATE: Not Listed

**California - Priority Toxic Pollutants**
- WATER: Not Listed
- POTASSIUM CARBONATE ANHYDROUS: Not Listed
- SODIUM CITRATE TRISODIUM SALT DIHYDRATE: Not Listed
- SODIUM AZIDE: Not Listed
- GOLD CHLORIDE TRIHYDRATE: 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:

Methods for cleaning up: Do not re-use empty containers
Soak up with inert absorbent material.

14. TRANSPORT INFORMATION

UN/Id No: Not regulated

DOT:

Proper shipping name: Not Regulated

TDG (Canada):

WHMIS hazard class: Not determined

15. REGULATORY INFORMATION

International Inventories

WATER
Inventory - United States TSCA - Sect. 8(b)
Present
Canada DSL Inventory List -
Present
Australia (AICS):
Present
Inventory - China:
Present
EU EINECS List -
231-791-2; H2O
Inventory - Japan:
JP Listed.
Korean KECL:
KE-35400
Philippines PICCS:
Present
POTASSIUM CARBONATE ANHYDROUS
Inventory - United States TSCA - Sect. 8(b)
Listed
Canada DSL Inventory List -
Listed
Australia (AICS):
Listed.
## 15. REGULATORY INFORMATION

### U.S. regulations:

<table>
<thead>
<tr>
<th>Component</th>
<th>U.S. DOT - Appendix A Table 1 - Reportable Quantities</th>
<th>U.S. DOT - Appendix B - Marine Pollutants</th>
<th>U.S. DOT - Appendix B - Severe Marine Pollutants</th>
</tr>
</thead>
<tbody>
<tr>
<td>WATER</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
</tr>
<tr>
<td>POTASSIUM CARBONATE ANHYDROUS</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
</tr>
<tr>
<td>SODIUM CITRATE TRISODIUM SALT DIHYDRATE</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
</tr>
<tr>
<td>SODIUM AZIDE</td>
<td>RQ = 1000 pounds (454 kg)</td>
<td>Not Listed</td>
<td>Not Listed</td>
</tr>
<tr>
<td>GOLD CHLORIDE TRIHYDRATE</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
</tr>
</tbody>
</table>

### Components:

<table>
<thead>
<tr>
<th>Component</th>
<th>California Proposition 65 Right to Know List</th>
<th>Massachusetts Right to Know List</th>
<th>New Jersey Right to Know List</th>
<th>Pennsylvania Right to Know List</th>
</tr>
</thead>
<tbody>
<tr>
<td>WATER</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
</tr>
<tr>
<td>POTASSIUM CARBONATE ANHYDROUS</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
</tr>
<tr>
<td>SODIUM CITRATE TRISODIUM SALT DIHYDRATE</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
</tr>
<tr>
<td>SODIUM AZIDE</td>
<td>Not Listed</td>
<td>Listed</td>
<td>Substance no. 1684 Listed.</td>
<td>Listed</td>
</tr>
<tr>
<td>GOLD CHLORIDE TRIHYDRATE</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
</tr>
</tbody>
</table>

Catalog Number: 67800

Product Name: GOLD COLLOID 5 nm

Page 6 of 7
WATER Not Listed Not Listed Not Listed
POTASSIUM CARBONATE ANHYDROUS Not Listed Not Listed Not Listed
SODIUM CITRATE TRISODIUM SALT DIHYDRATE Not Listed Not Listed Not Listed
SODIUM AZIDE [present] Listed. Not Listed No hazard limiting value has been established
GOLD CHLORIDE TRIHYDRATE Not Listed Not Listed Not Listed

Components SARA 313 Emission reporting/Toxic Release of Chemicals CERCLA/SARA - Section 302 Extremely Haz NTP: IARC:
WATER Not Listed Not Listed None None
POTASSIUM CARBONATE ANHYDROUS Not Listed Not Listed None None
SODIUM CITRATE TRISODIUM SALT DIHYDRATE Not Listed Not Listed None None
SODIUM AZIDE 1.0 % TPQ = 500 pounds (This material is a reactive solid. The TPQ does not default to 10,000 pounds for non-powder, non-molten, non-solvent form); RQ = 1000 pounds Listed. None
GOLD CHLORIDE TRIHYDRATE Not Listed Not Listed None 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).

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