

MATERIAL SAFETY DATA SHEET

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EMERGENCY NO. 1-800-424-9300

SECTION 1. MATERIAL IDENTIFICATION

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MATERIAL NAME: BRIGHT ELECTROLESS GOLD

OTHER DESIGNATIONS: Gold Plating Solution

CHEMICAL FAMILY

TRADE NAME: BRIGHT ELECTROLESS GOLD

SECTION 2. INGREDIENTS AND HAZARDS

| | % w/v | HAZARD DATA Toxicity (mg/M ³) |
|--|-------|--|
| Potassium Gold Cyanide, C ₄ AuN ₄ K CAS 13967-50-5 | < 1 | 10 ppm* |
| Citric Acid C ₆ H ₈ O ₇ , CAS 62-56-6 | 1-5 | N/A |
| Ethylenediamine Tetracetic Acid, Tetrasodium salt, CAS 64-02-8 LD ₅₀ | 1-5 | 2g/Kg 50 ppm ** |
| Ammonium Hydroxide, NH ₄ OH, CAS 133-62-16 | 1-5 | |
| Distilled Water | >84% | |

*As NH₃

** 10 ppm as HCN (hydrocyanic gas) when mixed with strong acids.

HMIS Rating

Health : 3 Reactivity : 0 Flammability : 1

SECTION 3. HEALTH HAZARD INFORMATION: TLV Potassium Gold Cyanide:10 ppm

Effects of overexposure: Weakness, dizziness, headache, vomiting and finally unconsciousness. Symptoms of mild respiratory irritation.

FIRST AID: SEE SECTION 4

Eye contact: Flush for at least 15 minutes with water, lifting both lids. Contact a physician.

Skin contact: Flush area of contact with water. Discard contaminated clothing.

Inhalation: Remove to fresh air. If breathing has stopped, give artificial respiration. Get medical attention immediately.

INGESTION: DO NOT INDUCE VOMITING. Get medical attention immediately.

SECTION 4. FIRST AID

—POISON—

CAUTION CYANIDE

DIRECTIONS FOR TREATMENT (CYANIDE AND HCN GAS POISONING). CALL A PHYSICIAN IMMEDIATELY !

CARRY PATIENT TO FRESH AIR. HAVE HIM LIE DOWN. REMOVE CONTAMINATED CLOTHING BUT KEEP PATIENT WARM.

IF PATIENT IS CONSCIOUS AND BREATHING:

1. Break amyl nitrite pearl in cloth and hold lightly over nose for not more than 15-20 seconds. Repeat every 5 minutes for 25 seconds if recovery is not forthcoming.

IF CYANIDE HAS BEEN SWALLOWED AND PATIENT IS CONSCIOUS:

2. Give patient one pint of 1% Sodium Thiosulfate (or soapy water or mustard water) by mouth every 15 minutes until vomiting occurs.

IF PATIENT HAS STOPPED BREATHING:

3. Give artificial respiration until breathing starts. Break amyl nitrite pearl in a cloth and hold lightly over nose for not more than 20 seconds, repeating every 5 minutes for 25 seconds or until breathing starts.

IF PATIENT IS UNCONSCIOUS BUT BREATHING:

4. Break amyl nitrate pearl in a cloth and hold lightly over nose for not more than 20 seconds, repeating every 5 minutes for 25 seconds if recovery is not forthcoming. Give oxygen from inhalator.

NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

KEEP PATIENT QUIET AND WARM UNTIL PHYSICIAN ARRIVES.

SECTION 5. FIRE AND EXPLOSION DATA

| Flash Point and Method | Autoignition Temp. | Flammability Limits in Air | LOWER | UPPER |
|------------------------|--------------------|----------------------------|-------|-------|
| Non Flammable | NOT APPLICABLE | | — | — |

Extinguishing media: Air foam or water fog.

Special fire fighting procedures: Wear full protective clothing and mask with ammonia vapor canister.

SECTION 6. SPILL AND LEAK PROCEDURES

SPILLS, LEAKS: DO NOT allow water containing cyanide to escape into water course or into sewer which may contain acid; contact with acid may release poisonous and flammable hydrogen cyanide (HCN) gas. Sweep up spillage for disposal. Decontaminate spill area with sodium hypochlorite solution.

SECTION 7. SPECIAL PRECAUTIONS AND COMMENTS

Storage & Handling Information: Store in a dry, well ventilated place. Keep container closed. Use only dry, clean utensils in handling. Do not store with acids, weak alkalies, or strong oxidizers.

SECTION 8. SPECIAL PROTECTION INFORMATION

Respiratory protection: Air supplied self-contained breathing apparatus, NIOSH approved. Dust filter respirator danger of exceeding exposure limits.

Ventilation: Local exhaust ventilation system. To keep exposure below airborne limits

Fire—No
 Release of Pressure—No
 Acute Health Hazard—Yes

SECTION 16. OTHER INFORMATION
Addendum to Material Safety Data Sheet
Regulatory Status

This addendum must not be detached from the MSDS. Identifies SARA 313 substances(s). Any copying or redistribution of the MSDS must include a copy of this addendum.

Hazard Categories for SARA
 Section 311/312 Reporting
 Acute Chronic Fire Pressure Reactive

| Products or Components of product. | SARA EHS Sect.302 | | SARA Section 313 Chemicals | | CERCLA Sec.103 | RCRA |
|--|-------------------|-------------|----------------------------|-------------------|----------------|-------------|
| | RQ (lbs.) | Tpqr (lbs.) | Name List | Chemical Category | RQ (lbs.) | Sec. 261.33 |
| Potassium Gold Cyanide (Cyanide Compound) (14263-59-3) | No | No | No | Yes | No | No |

Applicable Products:
 Bright Electroless Gold, Special Gold.

SARA Section 302 EHS RQ; Reportable Quantity of Extremely Hazardous Substance, listed at 40 CFR 355
 SARA Section 302 EHS TPQ: Threshold Planning Quantity of Extremely Hazardous Substance. An asterik (*) following a Threshold Planning Quantity signifies That if the material is a solid and has a particle size equal to or larger than 100 micrometers, the Threshold Planning Quantity=10000 lbs.
 SARA Section 313 Chemicals: Toxic Substances subject to annual release reporting requirements listed at 40 CFR 372.65.
 CERCLA Sec. 103: Comprehensive Environmental Response, Compensation and Liability Act (Superfund). Releases to air, land or water of these hazardous Substances which exceed the Reportable Quantity (RQ) must be reported to the National Response Center, (800-424-8802); Listed at 40 CFR 302.4
 RCRA: Resource Conservation and Reclamation Act. Commercial chemical product wastes designated as acute hazards and toxic under 40 CFR 261.33