# SAFETY DATA SHEET

According to 29 CFR 1910.1200 Hazard Communication Standard 2012 (HazCom 2012)

## SECTION 1: Identification

**Product identifier**

Product name: Copper Reagent #1

Product number: R-0860; R-0860-PL

**Recommended use and restrictions:** To be used in accordance with manufacturer instructions or under the direct guidance of the manufacturer.

**Manufacturer:**

Taylor Technologies, Inc.
31 Loveton Circle
Sparks, MD 21152
Phone: (410) 472-4340
Emergency phone: (800) 837-8548

## SECTION 2: Hazard(s) identification

**Physical hazards:** Not applicable

**Health hazards:**

| | |
|---|---|
| Eye damage/irritation | Category 2A |
| Skin corrosion/irritation | Category 2 |

**Environmental hazards:** Not currently regulated by OSHA. For additional information, refer to section 12 of the SDS.

**Label elements**

Hazard pictograms

Signal word: Warning

Hazard statements: Causes serious eye irritation. Causes skin irritation.

Precautionary statements

Prevention: Wash skin thoroughly after handling. Wear eye protection/face protection if contact is likely to occur.

Response: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF EYE IRRITATION PERSISTS: Get medical advice/attention. IF ON SKIN: Wash with plenty of water. IF SKIN IRRITATION OCCURS: Get medical advice/attention. Take off contaminated clothing and wash it before reuse.

Storage: Keep tightly capped. Store out of direct sunlight between 36°F–85°F.

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

**Hazards not otherwise classified:** Not applicable

## SECTION 3: Composition/information on ingredients

**Mixture**

| Chemical name | Common name and synonyms | CAS number | % w/w |
|---|---|---|---|
| Water | Dihydrogen oxide | 7732-18-5 | 80-100 |
| Ammonium Citrate | Citric acid triammonium salt | 3458-72-8 | 5-10 |
| Ammonium Chloride | Salmiac | 12125-02-9 | 1-5 |
| Ammonium Hydroxide | Ammonia solution | 1336-21-6 | 1-5 |

## SECTION 4: First-aid measures

**If inhaled**

Remove individual to fresh air. Seek medical advice/attention if breathing becomes difficult or if respiratory irritation develops. Give oxygen or artificial respiration if needed.

**In case of skin contact**

Immediately flush skin with plenty of water for at least 20 minutes. If clothing comes in contact with the product, the clothing should be removed and laundered before reuse. Seek medical advice/attention if irritation develops.

**In case of eye contact**

Immediately flush eyes with plenty of water for at least 20 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If symptoms persist or in all cases of concern, seek medical advice/attention.

**If swallowed**

Rinse mouth. Never give anything by mouth to a person who is unconscious or is having convulsions. Do NOT induce vomiting unless directed by physician. If vomiting occurs, keep head low so that stomach content does not get into the lungs. If symptoms persist or in all cases of concern, seek medical advice/attention.

**Most important symptoms and effects, both acute and delayed**

Refer to section 2 and/or section 11 of the SDS for the most important known symptoms and effects.

**Indication of any immediate medical attention and special treatment needed**

Provide general supportive measures and treat symptomatically.

**General information**

Ensure medical personnel are aware of the material(s) involved and take precautions to protect themselves.

## SECTION 5: Firefighting measures

**Extinguishing media**

| | |
|---|---|
| Suitable extinguishing media | Use extinguishing media appropriate for surrounding fire. |
| Unsuitable extinguishing media | Do not use a heavy water stream. Use of heavy stream of water may spread fire. |

**Specific hazards arising from the substance or mixture**

| | |
|---|---|
| Fire hazard | Not flammable |
| Explosion hazard | Not explosive |
| Reactivity | Hazardous reactions will not occur under normal conditions. |
| Hazardous combustion products | Ammonia, hydrogen chloride gas, and nitroxides. Other irritating fumes and smoke. |

**Advice for firefighters**

| | |
|---|---|
| Precautionary measures | Exercise caution when fighting any chemical fire; hazardous fumes will be present. |
| Firefighting equipment/instructions | Use water spray or fog for cooling exposed containers. |
| Protection during firefighting | Do not enter fire area without proper protective equipment, including respiratory protection. |
| Other information | Refer to section 9 of the SDS for flammability properties. |

## SECTION 6: Accidental release measures

**Personal precautions, protective equipment, and emergency procedures**

Wear appropriate protective equipment and clothing during cleanup. Local authorities should be advised if significant spillages cannot be contained. For personal protective equipment, refer to section 8 of the SDS.

**Environmental precautions**

Avoid discharge into drains, watercourses, or onto the ground.

**Methods and material for containment and cleaning up**

Dike the spilled material where this is possible. Stop leak if it can be done without risk. Absorb spillage to prevent material damage. Absorb in vermiculite, dry sand or earth, and place into containers. Prevent entry into waterways, sewers, basements, or confined areas. Following product recovery, flush area with water. Never return spills to original containers for reuse. Contaminated absorbent material may pose the same hazards as the spilled product. In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

**Reference to other sections**

For exposure controls and personal protection, refer to section 8 of the SDS. For waste disposal, refer to section 13 of the SDS.

## SECTION 7: Handling and storage

**Personal precautions, protective equipment, and emergency procedures**

Do not breathe mist or vapor. Do not get in eyes, on skin, or on clothing. Wash skin thoroughly after handling. Do not taste or swallow. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. For personal protective equipment, refer to section 8 of the SDS. Keep away from incompatibles. Observe good industrial hygiene practices. Label containers appropriately

**Conditions for safe storage, including any incompatibilities**

Keep tightly capped. Store out of direct sunlight between 36°F–85°F. Store away from incompatible materials (refer to section 10 of the SDS).

## SECTION 8: Exposure controls/personal protection

**Occupational exposure limits**

| US ACGIH Threshold Limit Values | | |
|---|---|---|
| Ammonium hydroxide (CAS 1336-21-6) as ammonia | TWA | 18 mg/m$^3$ |
| Ammonium hydroxide (CAS 1336-21-6) as ammonia | STEL | 27 mg/m$^3$ |

| US NIOSH: Pocket Guide to Chemical Hazards | | |
|---|---|---|
| Ammonium hydroxide (CAS 1336-21-6) as ammonia | TWA | 18 mg/m$^3$ |
| Ammonium hydroxide (CAS 1336-21-6) as ammonia | STEL | 27 mg/m$^3$ |
| Ammonium hydroxide (CAS 1336-21-6) as ammonia | IDHL | 210 mg/m$^3$ |

| US OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) | | |
|---|---|---|
| Ammonium hydroxide (CAS 1336-21-6) as ammonia | TWA | 35 mg/m$^3$ |

**Biological limit values**

No biological exposure limits noted for the ingredient(s).

**Exposure controls**

| | |
|---|---|
| Appropriate engineering controls | Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eyewash facilities and emergency shower must be available when handling this product. |
| Personal protective equipment | |
| Eye/face protection | Wear appropriate chemical safety goggles if contact is likely to occur. |
| Skin protection | Wear appropriate chemical-resistant gloves and clothing if contact is likely to occur. |
| Body protection | Wear appropriate protective clothing. |
| Respiratory protection | In case of insufficient ventilation, wear suitable respiratory equipment. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fumes at levels exceeding the exposure limits. Advice should be sought from respiratory protection suppliers. |

## SECTION 9: Physical and chemical properties

**Information on basic physical and chemical properties**

| | |
|---|---|
| Physical state | Liquid |
| Form | Liquid |
| Color | Clear, colorless |
| Odor | Ammonia |
| Odor threshold | No data available |
| pH | 9.5 |
| Evaporation rate | No data available |
| Melting point | No data available |
| Freezing point | No data available |
| Initial boiling point (boiling range) | No data available |
| Flash point | No data available |
| Specific gravity | No data available |
| Auto-ignition temperature | No data available |
| Decomposition temperature | No data available |
| Flammability (solid, gas) | No data available |
| Upper Flammability Limit | No data available |
| Lower Flammability Limit | No data available |
| Vapor pressure | No data available |
| Vapor density | No data available |
| Solubility | No data available |
| Partition coefficient | No data available |

| | |
|---|---|
| (n-octanol/water) | |
| Viscosity | No data available |
| Explosive properties | No data available |
| Oxidizing properties | No data available |

## SECTION 10: Stability and reactivity

| | |
|---|---|
| **Reactivity** | Hazardous reactions will not occur under normal conditions. |
| **Chemical stability** | Stable under recommended handling and storage conditions (refer to section 7 of the SDS). |
| **Possibility of hazardous reactions** | No dangerous reaction known under conditions of normal use. |
| **Conditions to avoid** | Contact with incompatible materials. Do not use in areas without adequate ventilation. |
| **Incompatible materials** | Alkalis, halogens, heavy metals, silver nitrate, sodium hydroxide, strong acids, strong bases, and strong oxidizing agents. |
| **Hazardous decomposition products** | Ammonia fumes. In the event of fire, see section 5 of the SDS. |

## SECTION 11: Toxicological information

**Information on toxicological effects**

**Likely routes of exposure are skin/eye contact and ingestion.**

| | |
|---|---|
| **Most important symptoms/effects, acute and delayed** | Direct skin contact may cause irritation. Symptoms may include redness and itching. |
| | Direct eye contact may cause serious irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. |
| | Inhalation of dust can cause respiratory irritation. Symptoms may include coughing and breathing difficulties. |
| | Ingestion may cause gastrointestinal irritation, nausea, vomiting, and diarrhea. |
| **Acute toxicity** | This product is not classified as an acute toxicity hazard. See below for product and individual ingredient acute toxicity data. |

| **Product** | **Species** | **Acute Toxicity Estimate (ATE)** |
|---|---|---|
| Copper Reagent #1 (CAS Mixture) | | |
| **Acute** | | |
| *Dermal* | | |
| $LD_{50}$ | Rat | No data available |
| *Inhalation* | | |
| $LC_{50}$ | Rat | No data available |
| *Oral* | | |
| $LD_{50}$ | Rat | >2000 mg/kg |

| **Components** | **Species** | **Acute Toxicity Data** |
|---|---|---|
| Ammonium hydroxide (CAS 1336-21-6) | | |
| **Acute** | | |
| *Dermal* | | |
| $LD_{50}$ | Rat | No data available |
| *Inhalation* | | |
| $LC_{50}$ | Rat | No data available |
| *Oral* | | |
| $LD_{50}$ | Rat | 350 mg/kg |
| Ammonium chloride (CAS 12125-02-9) | | |
| **Acute** | | |
| *Dermal* | | |
| $LD_{50}$ | Rat | No data available |
| *Inhalation* | | |
| $LC_{50}$ | Rat | No data available |
| *Oral* | | |
| $LD_{50}$ | Rat | 1650 mg/kg |

| | |
|---|---|
| **Skin corrosion/irritation** | Causes skin irritation |

| | |
|---|---|
| **Serious eye damage/eye irritation** | Causes serious eye irritation |
| **Respiratory sensitization** | No data available |
| **Skin sensitization** | No data available |
| **Germ cell mutagenicity** | No data available |

**Carcinogenicity**

**IARC Monographs. Overall Evaluation of Carcinogenicity**

Not regulated

**OSHA Specifically Regulated Substances (29 CFR 1910.1001-1096)**

Not regulated

**US National Toxicology Program (NTP) Report on Carcinogens**

Not regulated

| | |
|---|---|
| **Reproductive toxicity** | No data available |
| **Specific target organ toxicity (single exposure)** | No data available |
| **Specific target organ toxicity (repeated exposure)** | No data available |
| **Aspiration hazard** | No data available |

## SECTION 12: Ecological information

| | |
|---|---|
| **Ecotoxicity** | This product is not classified as environmentally hazardous. |
| **Persistence and degradability** | No data available |
| **Bioaccumulative potential** | No data available |
| **Mobility in soil** | No data available |
| **Other adverse effects** | Large or frequent spills can have a harmful or damaging effect on the environment. |

## SECTION 13: Disposal considerations

Collect and reclaim or dispose of in sealed containers at a licensed waste disposal site. Since emptied containers may retain product residue, follow label warnings even after container is emptied. This material and its container must be disposed of in a safe manner. Dispose of contents/container in accordance with local/regional/national/international regulations.

## SECTION 14: Transport information

| | |
|---|---|
| **DOT** | Not regulated as dangerous goods |
| **IATA** | Not regulated as dangerous goods |
| **IMDG** | Not regulated as dangerous goods |

## SECTION 15: Regulatory information

**US federal regulations**

**CERCLA Hazardous Substance (40 CFR 302.4)**

| Chemical name | CAS number | Reportable Quantity |
|---|---|---|
| Ammonium chloride | 12125-02-9 | 5000 lbs |
| Ammonium hydroxide | 1336-21-6 | 1000 lbs |

**SARA 302 Extremely Hazardous Substance (40 CFR 355 Appendices A / B)**

Not regulated

**SARA 304 Emergency Release Notification**

Not regulated

**SARA 311/312 Hazardous Chemical**

| Chemical name | CAS number |
|---|---|
| Ammonium hydroxide | 1336-21-6 |

**SARA 313 (TRI reporting)**

| Chemical name | CAS number |
|---|---|
| Ammonium hydroxide | 1336-21-6 |

**TSCA Section 8(b) Chemical Inventory**

All components are on the U.S. EPA TSCA Inventory list.

**TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)**

Not regulated

**Other federal regulations**

**Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs)**

Not regulated

**Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)**

Not regulated

**Clean Water Act, Toxic and Priority Pollutants (40 CFR 401.15 and CFR 423, Appendix A)**

| Chemical name | CAS number |
|---|---|
| Ammonium hydroxide | 1336-21-6 |

**Safe Drinking Water Act (SDWA)**

Not regulated

**US state regulations**

**California Safe Drinking Water and Toxic Enforcement Act of 1986 (California Proposition 65)**

Not regulated

**Massachusetts Right-to-Know Act**

| Chemical name | CAS number |
|---|---|
| Ammonium hydroxide | 1336-21-6 |

**New Jersey Worker and Community Right-to-Know Act**

| Chemical name | CAS number |
|---|---|
| Ammonium chloride | 12125-02-9 |
| Ammonium hydroxide | 1336-21-6 |

**Pennsylvania Worker and Community Right-to-Know Act**

| Chemical name | CAS number |
|---|---|
| Ammonium chloride | 12125-02-9 |
| Ammonium hydroxide | 1336-21-6 |

**Rhode Island Right-to-Know Act**

| Chemical name | CAS number |
|---|---|
| Ammonium chloride (fume) | 12125-02-9 |

## SECTION 16: Other information

**NFPA Rating**

| | |
|---|---|
| Health hazard | 1 |
| Fire hazard | 0 |
| Reactivity | 0 |
| Specific | N/A |

**Disclaimer**

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 The information contained in this sheet is based on lab experience and the most current data available.

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