

## 1. Identification

<b>Product identifier</b>	<b>Copper Reagent #1</b>
<b>Product code</b>	R-0860
<b>Recommended use</b>	Use as directed by manufacturer for purposes directly related to water testing.
<b>Recommended restrictions</b>	None known

### Manufacturer/Importer/Supplier/Distributor information

#### Manufacturer

<b>Company name</b>	Taylor Technologies, Inc.	
<b>Address</b>	31 Loveton Circle Sparks, MD 21152 United States	
<b>Telephone</b>	(410) 472-4340	Monday–Friday, 8:00 a.m.–4:30 p.m.
<b>Website</b>	www.taylortechnologies.com	
<b>E-mail</b>	Not available	
<b>Emergency phone number</b>	(800) 837-8548	

## 2. Hazard(s) identification

<b>Physical hazards</b>	Corrosive to metals	Category 1
<b>Health hazards</b>	Eye damage/irritation	Category 1
	Skin corrosion/irritation	Category 1C
	Specific target organ toxicity, single exposure	Category 3 Respiratory tract irritation
<b>Environmental hazards</b>	Not currently regulated by OSHA; refer to section 12 of the SDS for additional information.	

### Label elements



<b>Signal word</b>	Danger
<b>Hazard statement</b>	May be corrosive to metals. Causes severe skin burns and eye damage. May cause respiratory irritation.
<b>Precautionary statement</b>	
<b>Prevention</b>	Keep only in original container. Do not breathe mist or vapor. Wash skin thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection.
<b>Response</b>	Absorb spillage to prevent material damage.
	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
	IF ON SKIN (OR HAIR): Take off immediately all contaminated clothing. Rinse skin with water.
	Wash contaminated clothing before reuse.
	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
	Immediately call a physician or poison control center.
<b>Storage</b>	Store locked up. Store in a corrosive-resistant container with a corrosive resistant liner.

<b>Disposal</b>	Dispose of contents/container in accordance with local/regional/national/international regulations.
<b>Hazard(s) not otherwise classified</b>	May cause pulmonary edema (fluid accumulation). Symptoms of pulmonary edema (chest pain, shortness of breath) may be delayed. Ingestion may produce burns to the lips, oral cavity, upper airway, esophagus, and possibly the digestive tract.
<b>Supplemental information</b>	None

### 3. Composition/information on ingredients

#### Mixtures

Chemical name	Common name and synonyms	CAS number	%
Deionized water	Dihydrogen oxide	7732-18-5	65–75
Ammonium hydroxide	Ammonium water	1336-21-6	20–25
Citric acid	Citric acid monohydrate	5949-29-1	5–10

### 4. First-aid measures

<b>Inhalation</b>	Move to fresh air. Give oxygen or artificial respiration if needed. Get medical attention immediately.
<b>Skin contact</b>	Immediately flush skin with running water for at least 20 minutes. Immediately take off all contaminated clothing. Call a physician or poison control center immediately. Chemical burns must be treated by a physician. Wash contaminated clothing before reuse.
<b>Eye contact</b>	Immediately flush eyes with plenty of water for at least 20 minutes. Remove contact lenses if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.
<b>Ingestion</b>	Call a physician or poison control center immediately. 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.
<b>Most important symptoms/effects, acute and delayed</b>	Direct skin contact may cause corrosive skin burns, deep ulcerations, and possibly permanent scarring. Direct contact with concentrated solutions may be corrosive to the eyes and may cause severe damage, including blindness. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.  Inhalation of mists can cause severe respiratory irritation. Symptoms may include coughing, choking, and wheezing. Inhalation could result in pulmonary edema (fluid accumulation). Symptoms of pulmonary edema (chest pain, shortness of breath) may be delayed.  Ingestion may produce burns to the lips, oral cavity, upper airway, esophagus, and possibly the digestive tract. Symptoms may include abdominal pain, vomiting, burns, perforations, bleeding.
<b>Indication of immediate medical attention and special treatment needed</b>	Provide general supportive measures and treat symptomatically.  Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep person under observation. Symptoms may be delayed.
<b>General information</b>	Ensure medical personnel are aware of the material(s) involved and take precautions to protect themselves.

### 5. Firefighting measures

<b>Suitable extinguishing media</b>	Carbon dioxide. Dry chemical powder. Foam. Water fog. Water spray.
<b>Unsuitable extinguishing media</b>	Do not use water jet as an extinguisher, as this will spread the fire.
<b>Specific hazards arising from the chemical</b>	During fire, gases hazardous to health may be formed.
<b>Special protective equipment and precautions for firefighters</b>	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
<b>Firefighting equipment/instructions</b>	Firefighters should wear full protective gear. Evacuate the area promptly. Fight fire from upwind to avoid exposure to combustion products. Cool containers/tanks with water spray. Do not get water inside container. Move containers from fire area if it can be done without risk. Prevent fire-extinguishing water from contaminating surface water or the ground water system.
<b>Specific methods</b>	Use standard firefighting procedures and consider the hazards of other involved materials.

**General fire hazards** No unusual fire or explosion hazards noted  
**Hazardous combustion products** Ammonia. Chlorine. Nitrogen oxides. Other irritating fumes and smoke.

## 6. Accidental release measures

**Personal precautions, protective equipment, and emergency procedures** Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Wear appropriate protective equipment and clothing during cleanup. Do not breathe mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protective equipment, refer to section 8 of the SDS.

**Methods and materials for containment and cleaning up**

This product is miscible in water.  
 Large Spills: 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, sewer, basements, or confined areas. Following product recovery, flush area with water.  
 Small Spills: Absorb spillage with noncombustible, absorbent material. Clean surface thoroughly to remove residual contamination.  
 Never return spills to original containers for reuse. For waste disposal, refer to section 13 of the SDS. 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.

**Environmental precautions**

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

## 7. Handling and storage

**Precautions for safe handling**

Do not breathe mist or vapor. Do not get in eyes, on skin, or on clothing. 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 metals and other incompatibles. Observe good industrial hygiene practices. Label containers appropriately.

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

Store locked up. Store in corrosive-resistant container with a corrosive-resistant inner liner. Keep only in the original container. Store in a cool, dry place out of direct sunlight. Store away from incompatible materials (refer to section 10 of the SDS).

## 8. Exposure controls/personal protection

**Occupational exposure limits**

**U.S. NIOSH: Pocket Guide to Chemical Hazards**

Components	Type	Value	Form
Ammonium hydroxide (CAS 1336-21-6)	TWA	35 mg/m <sup>3</sup>	Ammonia
	STEL	27 mg/m <sup>3</sup>	Ammonia

**Biological limit values**

No biological exposure limits noted for the ingredient(s)

**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.

**Individual protection measures, such as personal protective equipment**

**Eye/face protection**

Wear safety glasses with side shields (or goggles) and a face shield. Provide an emergency eyewash fountain and quick-drench shower in the immediate work area.

**Skin protection**

**Hand protection**

Wear appropriate chemical-resistant gloves. Advice should be sought from glove suppliers.

**Other**

Wear appropriate chemical-resistant 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.

**Thermal hazards**

When necessary, wear appropriate thermal protective clothing.

**General hygiene considerations**

Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking and/or smoking. Routinely wash work clothing and protective equipment to remove contamination.

**9. Physical and chemical properties****Appearance**

<b>Physical state</b>	Liquid
<b>Form</b>	Liquid
<b>Color</b>	Clear, colorless
<b>Odor</b>	Ammonical
<b>Odor threshold</b>	Not available
<b>pH</b>	9.5
<b>Melting point/freezing point</b>	Not available
<b>Initial boiling point and boiling range</b>	212°F (100°C)
<b>Flash point</b>	Not applicable (does not burn)
<b>Evaporation rate</b>	Not available
<b>Flammability (solid, gas)</b>	Not applicable
<b>Upper/lower flammability or explosive limits</b>	
<b>Flammability limit, lower (%)</b>	16% as NH <sub>3</sub>
<b>Flammability limit, upper (%)</b>	27% as NH <sub>3</sub>
<b>Explosive limit, lower (%)</b>	Not applicable
<b>Explosive limit, upper (%)</b>	Not applicable
<b>Vapor pressure</b>	17 mm Hg
<b>Vapor density</b>	0.6
<b>Relative density</b>	1.00 g/cm <sup>3</sup>
<b>Solubility(ies)</b>	
<b>Solubility (water)</b>	Soluble in all proportions
<b>Partition coefficient (n-octanol/water)</b>	Not available
<b>Auto-ignition temperature</b>	Not applicable
<b>Decomposition temperature</b>	Not available
<b>Viscosity</b>	Not available
<b>Other information</b>	
<b>Explosive properties</b>	Not applicable
<b>Oxidizing properties</b>	Not applicable
<b>Percent volatile</b>	96%
<b>Specific gravity</b>	1.00

**10. Stability and reactivity**

<b>Reactivity</b>	This product is stable and nonreactive under normal conditions of use, storage, transport.
<b>Chemical stability</b>	Material is stable under normal conditions.
<b>Possibility of hazardous reactions</b>	No dangerous reaction known under conditions of normal use
<b>Conditions to avoid</b>	Extreme heat, temperatures. Contact with incompatible materials. Direct sunlight. Do not use in areas without adequate ventilation.
<b>Incompatible materials</b>	Halogens. Metal compounds. Strong acids.

**Hazardous decomposition products**

None known. For hazardous combustion products, refer to section 5 of the SDS.

## 11. Toxicological information

### Information on likely routes of exposure

<b>Inhalation</b>	May cause respiratory irritation
<b>Skin contact</b>	Causes severe skin burns and eye damage
<b>Eye contact</b>	Causes serious eye damage
<b>Ingestion</b>	Causes digestive tract burns

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

Direct skin contact may cause corrosive skin burns, deep ulcerations, and possibly permanent scarring. Direct contact with concentrated solutions may be corrosive to the eyes and may cause severe damage, including blindness. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.

Inhalation of mists can cause severe respiratory irritation. Symptoms may include coughing, choking, and wheezing. Inhalation could result in pulmonary edema (fluid accumulation). Symptoms of pulmonary edema (chest pain, shortness of breath) may be delayed.

Ingestion may produce burns to the lips, oral cavity, upper airway, esophagus, and possibly the digestive tract. Symptoms may include abdominal pain, vomiting, burns, perforations, bleeding.

**Acute toxicity**

This product is not classified as an acute toxicity hazard. See below for individual ingredient acute toxicity data.

<b>Components</b>	<b>Species</b>	<b>Test Results</b>
Ammonium hydroxide (CAS 1336-21-6)		
<b>Acute</b>		
<i>Dermal</i>		
LD <sub>50</sub>	Rabbit	Not available
<i>Inhalation</i>		
LC <sub>50</sub>	Rat	Not available
<i>Oral</i>		
LD <sub>50</sub>	Rat	350 mg/kg
Deionized water (CAS 7732-18-5)		
<b>Acute</b>		
<i>Dermal</i>		
LD <sub>50</sub>	Rabbit	Not available
<i>Inhalation</i>		
LC <sub>50</sub>	Rat	Not available
<i>Oral</i>		
LD <sub>50</sub>	Rat	>89840 mg/kg
<b>Skin corrosion/irritation</b>	Causes severe skin burns and eye damage	
<b>Serious eye damage/eye irritation</b>	Causes serious eye damage	
<b>Respiratory sensitization</b>	Not expected to be a respiratory sensitizer	
<b>Skin sensitization</b>	Not expected to be a skin sensitizer	
<b>Germ cell mutagenicity</b>	Not expected to be mutagenic	
<b>Carcinogenicity</b>	This product is not considered to be a carcinogen by IARC, NTP, OSHA, or U.S. ACGIH.	
<b>OSHA Specifically Regulated Substances (29 CFR 1910.1001-1096)</b>		
Not regulated		
<b>Reproductive toxicity</b>	This product is not expected to cause reproductive or developmental effects.	
<b>Specific target organ toxicity, single exposure</b>	May cause respiratory irritation	
<b>Specific target organ toxicity, repeated exposure</b>	Not classified as a specific target organ toxicity – repeated exposure	
<b>Aspiration toxicity</b>	Not expected to be an aspiration hazard	
<b>Chronic effects</b>	Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis.	

## 12. Ecological information

<b>Ecotoxicity</b>	This product is not classified as environmentally hazardous; however, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.
<b>Persistence and degradability</b>	Not available
<b>Bioaccumulative potential</b>	Not available
<b>Mobility in soil</b>	Not available
<b>Other adverse effects</b>	No other adverse environmental effects (e.g., ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

## 13. Disposal considerations

<b>Disposal instructions</b>	Collect and reclaim or dispose of in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.
<b>Local disposal regulations</b>	Dispose of in accordance with all applicable regulations.
<b>Hazardous waste code</b>	The waste code should be assigned in discussion with the user, the producer, and the waste disposal company.
<b>Waste from residues/unused products</b>	Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (refer to Disposal instructions).
<b>Contaminated packaging</b>	Empty containers should be taken to an approved waste-handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

## 14. Transportation information

### DOT

<b>UN number</b>	UN2672
<b>UN proper shipping name</b>	Ammonia solution
<b>Transport hazard class(es)</b>	
<b>Class</b>	8
<b>Subsidiary risk</b>	Not listed
<b>Label(s)</b>	8
<b>Packing group</b>	III
<b>Special precautions for user</b>	Read safety instructions, SDS, and emergency procedures before handling.
<b>Special provisions</b>	IB3, IP8, T7, TP1
<b>Packaging exceptions</b>	154
<b>Packaging, non-bulk</b>	203
<b>Packaging, bulk</b>	241

### IATA

<b>UN number</b>	UN2672
<b>UN proper shipping name</b>	Ammonia solution
<b>Transport hazard class(es)</b>	
<b>Class</b>	8
<b>Subsidiary risk</b>	Not listed
<b>Packing group</b>	III
<b>Environmental hazards</b>	
<b>Marine pollutant</b>	Yes
<b>Special provisions</b>	A64, A803
<b>ERG code</b>	8L
<b>Special precautions for user</b>	Read safety instructions, SDS, and emergency procedures before handling.
<b>Other information</b>	
<b>Passenger and cargo aircraft</b>	852
<b>Cargo aircraft only</b>	856

### IMDG

<b>UN number</b>	UN2672
<b>UN proper shipping name</b>	Ammonia solution
<b>Transport hazard class(es)</b>	
<b>Class</b>	8
<b>Subsidiary risk</b>	Not listed
<b>Packing group</b>	III
<b>Environmental hazards</b>	
<b>Marine pollutant</b>	Yes
<b>EmS</b>	F-A,S-B
<b>Special precautions for user</b>	Read safety instructions, SDS, and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

This substance/mixture is not intended to be transported in bulk.

DOT



IATA; IMDG



## 15. Regulatory information

### U.S. 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.

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

Not regulated

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

Ammonia (CAS 7664-41-7)

#### SARA 304 Emergency Release Notification

Not regulated

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

Not regulated

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

#### Hazard categories

Immediate hazard – yes

Delayed hazard – yes

Fire hazard – no

Pressure hazard – no

Reactivity hazard – yes

#### SARA 302 Extremely Hazardous Substance

Not regulated

#### SARA 311/312 Hazardous Chemical

Not regulated

#### SARA 313 (TRI reporting)

Chemical name	CAS number	% by weight
Ammonia	7664-41-7	20–25

### 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)

Ammonia (CAS 7664-41-7)

#### Safe Drinking Water Act (SDWA)

Not regulated

## U.S. state regulations

### California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)

Not regulated

### Massachusetts Right-to-Know Act

Ammonia (CAS 7664-41-7)

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

Ammonia (CAS 7664-41-7)

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

Ammonia (CAS 7664-41-7)

### Rhode Island Right-to-Know Act

Ammonia (CAS 7664-41-7)

### California Proposition 65

**California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):** This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

## International inventories

Country(ies) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	yes
Canada	Domestic Substances List (DSL)	yes
Canada	Non-Domestic Substances List (NDSL)	no
China	Inventory of Existing Chemical Substances Produced or Imported in China (IECSC)	yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	yes
Europe	European List of Notified Chemical Substances (ELINCS)	no
Japan	Existing and New Chemical Substances (ENCS)	yes
Korea	Existing Chemicals List (ECL)	yes
New Zealand	New Zealand Inventory of Chemicals (NZIoC)	yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA)	yes

\*A "yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(ies).

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(ies).

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

### List of abbreviations

ACGIH: American Conference of Governmental Industrial Hygienists  
AICS: Australian Inventory of Chemical Substances  
CAA: Clean Air Act  
CAS: Chemical Abstract Services  
CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act  
CFR: Code of Federal Regulations  
CSA: Canadian Standards Association  
DEA: Drug Enforcement Agency  
DOT: Department of Transportation  
DSL: Domestic Substances List  
EC: effective concentration  
ECL: Existing Chemicals List  
EINECS: European Inventory of Existing Commercial Chemical Substances  
ELINCS: European List of Notified Chemical Substances  
ENCS: Existing and New Chemical Substances  
EPA: Environmental Protection Agency  
HAP: hazardous air pollutants  
HMIS: Hazardous Materials Identification System  
HNOC: hazards not otherwise classified  
HPA: Hazardous Products Act  
HSDB: Hazardous Substances Data Bank  
IARC: International Agency for Research on Cancer  
IATA: International Air Transport Association



IBC Code: International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk  
 ICAO: International Civil Aviation Organization  
 IECSC: Inventory of Existing Chemical Substances Produced or Imported in China  
 IMDG: International Maritime Dangerous Goods  
 IUCLID: International Uniform Chemical Information Database  
 LC: lethal concentration  
 LD: lethal dose  
 MARPOL: marine pollution  
 MSHA: Mine Safety and Health Administration  
 NDSL: Non-Domestic Substances List  
 NFPA: National Fire Protection Association  
 NIOSH: National Institute of Occupational Safety and Health  
 NOEC: no observable effect concentration  
 NTP: National Toxicology Program  
 NZIoC: New Zealand Inventory of Chemicals  
 OECD: Organisation for Economic Co-operation and Development  
 OEL: occupational exposure limits  
 OSHA: Occupational Safety and Health Administration  
 PEL: permissible exposure limits  
 PICCS: Philippine Inventory of Chemicals and Chemical Substances  
 PPE: personal protective equipment  
 RCRA: Resource Conservation and Recovery Act  
 Act RQ: reportable quantity  
 RTECS: Registry of Toxic Effects of Chemical Substances  
 RTK: right to know  
 SARA: Superfund Amendments and Reauthorization Act  
 SDS: Safety Data Sheet  
 SDWA: Safe Drinking Water Act  
 STEL: short-term exposure limit  
 TLV: threshold limit values  
 TSCA: Toxic Substances Control Act  
 TWA: time-weighted average  
 VOC: volatile organic compounds  
 WEL: workplace exposure limit

**Disclaimer**

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**Issue date**

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