1. PRODUCT AND COMPANY IDENTIFICATION

<table>
<thead>
<tr>
<th>Product name</th>
<th>Ammonium dichromate solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS #</td>
<td>07789-09-5</td>
</tr>
<tr>
<td>Manufacturer</td>
<td>Sentury Reagents, Inc.</td>
</tr>
<tr>
<td></td>
<td>2515 Commerce Dr.</td>
</tr>
<tr>
<td></td>
<td>Rock Hill, SC 29730</td>
</tr>
<tr>
<td>Telephone</td>
<td>803-327-6880</td>
</tr>
<tr>
<td>Fax</td>
<td>803-327-3872</td>
</tr>
<tr>
<td>Emergency Phone # and</td>
<td>PERS 800-633-8253 or outside the United States 011-801-629-0667</td>
</tr>
<tr>
<td>Account</td>
<td>10613</td>
</tr>
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</table>

2. HAZARDS IDENTIFICATION

Emergency Overview

**OSHA Hazardous**
Oxidizer, Highly toxic by inhalation, Toxic by ingestion, Harmful by skin absorption, Skin and respiratory sensitizer, Corrosive, Carcinogen, teratogen, Reproductive hazard, Mutagen

**Target Organs**
Lungs, Kidney, Liver

**GHS Classification**
Oxidizing liquid (Category 3)
Acute toxicity, Oral (Category 3)
Acute toxicity, Inhalation (Category 2)
Acute toxicity, Dermal (Category 4)
Skin corrosion (Category 1B)
Serious eye damage (Category 1)
Respiratory sensitzation (Category 1)
Skin sensitzation (Category 1)
Germ cell mutagenicity (Category 1B)
Carcinogenicity (Category 1B)
Reproductive toxicity (Category 1B)
Specific target organ toxicity - repeated exposure (Category 1)
Acute aquatic toxicity (Category 1)
Chronic aquatic toxicity (Category 1)

**GH3 Label elements, including precautionary statements**

- **Pictogram**
- **Signal word** Danger
- **Hazard statement(s)**
  - H272 May intensify fire; oxidizer.
  - H301 Toxic if swallowed.
H312 Harmful in contact with skin.
H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H330 Fatal if inhaled.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H340 May cause genetic defects.
H350 May cause cancer.
H360FD May damage fertility or the unborn child.
H372 Causes damage to organs through prolonged or repeated exposure.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statement(s)
P201 Obtain special instructions before use.
P220 Keep/Store away from clothing/ combustible materials.
P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P284 Wear respiratory protection.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER or doctor/ physician.
P501 Dispose of contents/ container to an approved waste disposal plant.

HMIS Classification
Health hazard: 3
Chronic Health Hazard: •
Flammability: 0
Physical hazards: 2
Personal Protection E

NFPA Rating
Health hazard: 4
Fire: 0
Reactivity Hazard: 2
Special hazard: OX

Potential Health Effects
Inhalation May be fatal if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.

Skin Causes skin burns.

Eyes Causes eye burns.

Ingestion Toxic if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS
Synonyms Ammonium dichromate

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight %</th>
<th>CAS #</th>
<th>EC-No</th>
<th>Formula</th>
<th>Molecular Weight</th>
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<tbody>
<tr>
<td>AMMONIUM DICHROMATE</td>
<td>18</td>
<td>07789-09-5</td>
<td>1232-143-1</td>
<td>H8Cr2N207</td>
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<td>Water</td>
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<td>7732-18-5</td>
<td></td>
<td>H2O</td>
<td>18.00 g/mol</td>
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4. FIRST AID MEASURES

General advice Consult a physician. Show his safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Continue rinsing eyes during transport to hospital.

If swallowed Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.
5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special protective equipment for fire-fighters
Wear self contained breathing apparatus for firefighting if necessary.

Hazardous combustion products
Hazardous decomposition products formed under fire conditions. - nitrogen oxides (NOx), Chromium oxides

Further information
Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Wear respiratory protection. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

Methods and materials for containment and cleaning up
Sweep up and shovel. Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13). Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling
Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. Keep away from sources of ignition - No smoking. Keep away from heat and sources of ignition. Normal measures for preventive fire protection.

Conditions for safe storage
Keep container tightly closed in a dry and well-ventilated place. Do not grind or subject to friction or shock. Isolated storage is required.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Contains no substances with occupational exposure limit values.

Personal protective equipment

Respiratory protection
Where risk assessment show air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering control. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye protection
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection
Complete suit protecting against chemicals. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.
9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance
- Form: Orange Liquid
- Colour: Orange

Safety data
- pH: 3.0 – 4.0
- Melting point/freezing point: N/A
- Boiling point: no data available
- Flash point: not applicable
- Ignition temperature: no data available
- Autoignition temperature: no data available
- Lower explosion limit: no data available
- Upper explosion limit: no data available
- Vapour pressure: no data available
- Density: 1.08
- Water solubility: no data available
- Partition coefficient: n-octanol/water: no data available
- Relative vapour density: no data available
- Odour: no data available
- Odour Threshold: no data available
- Evaporation rate: no data available

10. STABILITY AND REACTIVITY

Chemical stability
Stable under recommended storage conditions.

Possibility of hazardous reactions
no data available

Conditions to avoid
no data available

Materials to avoid
Strong reducing agents, Alcohols, Strong acids, Do not store near acids.

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - nitrogen oxides (NOx), Chromium oxides
Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION

Acute toxicity
- Oral LD50
  LD50 Oral - rat - 53 mg/kg

  Inhalation LC50
  LC50 Inhalation - rat - 4 h - 160 ppm

  Dermal LD50

Other information on acute toxicity
no data available

Skin corrosion/irritation
data available
**Serious eye damage/eye irritation**
Eyes- rabbit - Severe eye irritation- Draize Test

**Respiratory or skin sensitization**
May cause allergic respiratory and skin reactions

**Germ cell mutagenicity**
May alter genetic material. In vivo tests showed mutagenic effects

**Carcinogenicity**
This is or contains a component that has been reported to be carcinogenic based on its IARC, OSHA, ACGIH, NTP, or EPA classification. Possible human carcinogen

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

**Reproductive toxicity**
May cause reproductive disorders.

**Teratogenicity**
May cause congenital malformation in the fetus. Presumed human reproductive toxicant

**Specific target organ toxicity · single exposure (Globally Harmonized System)**

**Specific target organ toxicity · repeated exposure (Globally Harmonized System)**
Causes damage to organs through prolonged or repeated exposure.

**Aspiration hazard**
No data available

**Potential health effects**

- **Inhalation**
  May be fatal if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.

- **Ingestion**
  Toxic if swallowed.

- **Skin**
  Causes skin burns.

- **Eyes**
  Causes eye burns.

**Signs and Symptoms of Exposure**
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

**Synergistic effects**
Not available

**Additional Information**
RTECS: Not available

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**12. ECOLOGICAL INFORMATION**

**Toxicity**

- Toxicity to fish  
  LCO- Leuciscus idus (Golden orfe)- 50 mg/1 - 48 h

**Persistence and degradability**
No data available

**Bioaccumulative potential**
No data available

**Mobility in soil**
No data available

**PBT and vPvB assessment**
No data available

**Other adverse effects**
13. DISPOSAL CONSIDERATIONS

Product
Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
UN number: 3287    Class: 6.1    Packing group: III
Proper shipping name: Toxic liquids inorganic, n.o.s. (Ammonium Dichromate Solution)
Reportable Quantity (RQ): 10 lbs
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG
UN number: 3287    Class: 6.1    Packing group: III
Proper shipping name: Toxic liquids inorganic, n.o.s. (Ammonium Dichromate Solution)
Marine pollutant: No
EMS-No: F-A, S-A

IATA
UN number: 3287    Class: 6.1    Packing group: III
Proper shipping name: Toxic liquids inorganic, n.o.s. (Ammonium Dichromate Solution)

15. REGULATORY INFORMATION

OSHA Hazards
Oxidizer, Toxic by inhalation, Toxic by ingestion, Harmful by skin absorption, Skin and respiratory sensitizer, Corrosive, Carcinogen, Teratogen, Reproductive hazard, Mutagen

SARA 302 Components
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
Reactivity Hazard, Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

<table>
<thead>
<tr>
<th>CAS No.</th>
<th>Revision Date</th>
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<tr>
<td>7789-09-5</td>
<td>1993-04-24</td>
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Pennsylvania Right To Know Components
Ammonium dichromate

New Jersey Right To Know Components
Ammonium dichromate

California Prop. 65 Components
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

Further information
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sentury Reagents, Inc., shall not be held liable for any damage resulting from handling or from contact with the above product.