1. PRODUCT AND COMPANY IDENTIFICATION

Product name                   Chromic Acid Solution
CAS #                          7738-94-5
Common Synonyms                Chromium Trioxide Solution, Chromium (VI) Oxide Solution
Manufacturer                   Sentury Reagents, Inc.
                                 2515 Commerce Dr.
                                 Rock Hill, SC 29730
Telephone                      803-327-6880
Fax                            803-327-3872
Emergency Phone #              PERS:  800-633-8253
International #               011-801-629-0667
Account                        10613

2. HAZARDS IDENTIFICATION

OSHA Hazards                   Oxidizer, Carcinogen, Target Organ Effect, Highly toxic by inhalation, Toxic by ingestion, Toxic by skin absorption, Corrosive, Teratogen, Reproductive hazard, Mutagen

Target Organs                  Kidney, Lungs, Liver, Nerves, Blood, Eyes, Skin, Respiratory system

GHS Classification             Oxidizing liquid (Category 1)
                                 Acute toxicity, Oral (Category 3)
                                 Acute toxicity, Inhalation (Category 2)
                                 Acute toxicity, Dermal (Category 3)
                                 Skin corrosion (Category 1A)
                                 Serious eye damage (Category 1)
                                 Respiratory sensitisation (Category 1)
                                 Skin sensitisation (Category 1)
                                 Germ cell mutagenicity (Category 1B)
                                 Carcinogenicity (Category 1A)
                                 Reproductive toxicity (Category 2)
                                 Specific target organ toxicity - repeated exposure, Inhalation (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)
H271               May cause fire or explosion; strong oxidizer.
H301 + H311        Toxic if swallowed or 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.

Sentury Reagents, Inc.
H340  May cause genetic defects.
H350  May cause cancer.
H361  Suspected of damaging fertility or the unborn child.
H372  Causes damage to organs through prolonged or repeated exposure if inhaled.
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: 4
Chronic Health Hazard: *
Flammability: 0
Physical hazards: 2
Personal protection F

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  Toxic if absorbed through skin. Causes skin burns.
Eyes  Causes eye burns. Causes severe eye burns.
Ingestion  Toxic if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Formula: CrO₃
Molecular Weight: 99.99 g/mol

<table>
<thead>
<tr>
<th>Component</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chromium trioxide</td>
<td>39-61%</td>
</tr>
<tr>
<td>CAS-No.  7738-94-5</td>
<td></td>
</tr>
<tr>
<td>EC-No.  215-607-8</td>
<td></td>
</tr>
<tr>
<td>Index-No.  024-001-00-0</td>
<td></td>
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<tr>
<td>Water</td>
<td>39-61%</td>
</tr>
<tr>
<td>CAS-No.  7732-18-5</td>
<td></td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

General advice
Consult a physician. Show this 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

Conditions of flammability
Not flammable or combustible.

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

Special protective equipment for firefighters
Wear self contained breathing apparatus for fire fighting if necessary.

Hazardous combustion products
Hazardous decomposition products formed under fire conditions. - 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 vapours, 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.

Conditions for safe storage
Keep container tightly closed in a dry and well-ventilated place. Hygroscopic Heat sensitive.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control parameters</th>
<th>Basis</th>
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</thead>
<tbody>
<tr>
<td>Chromium trioxide</td>
<td>1333-82-0</td>
<td>TWA</td>
<td>0.001 mg/m3</td>
<td>USA. NIOSH Recommended Exposure Limits</td>
</tr>
</tbody>
</table>

Remarks
Potential Occupational Carcinogen See Appendix C See Appendix A

See Table Z-2 for the exposure limit for any operations or sectors where the exposure limit in § 1910.1026 is stayed or is otherwise not in effect Substance listed; for more information see OSHA document 1910.1026

See 1910.1026. See Table Z-2 for the exposure limit for any operations or sectors where the exposure limit in 1910.1026 is stayed or are otherwise not in effect.

Personal protective equipment

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100

Sentury Reagents, Inc.
(US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. 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**
Safety glasses with side-shields conforming to EN166 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**
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

**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.

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**9. PHYSICAL AND CHEMICAL PROPERTIES**

<table>
<thead>
<tr>
<th>Appearance</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Form</strong></td>
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<tr>
<td><strong>Colour</strong></td>
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<table>
<thead>
<tr>
<th>Safety data</th>
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</thead>
<tbody>
<tr>
<td>pH</td>
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</tr>
<tr>
<td>Melting point/</td>
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<tr>
<td>Freezing point</td>
<td>-20ºC to -45ºC</td>
</tr>
<tr>
<td>Boiling point</td>
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</tr>
<tr>
<td>Flash point</td>
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</tr>
<tr>
<td>Ignition temperature</td>
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<tr>
<td>Autoignition</td>
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</tr>
<tr>
<td>temperature</td>
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</tr>
<tr>
<td>Lower explosion limit</td>
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</tr>
<tr>
<td>Upper explosion limit</td>
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<tr>
<td>Vapour pressure</td>
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<tr>
<td>Density</td>
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<td>Partition coefficient:</td>
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<tr>
<td>n-octanol/</td>
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<tr>
<td>Relative vapour density</td>
<td>no data available</td>
</tr>
<tr>
<td>Odour</td>
<td>no data available</td>
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<tr>
<td>Odour Threshold</td>
<td>no data available</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>no data available</td>
</tr>
</tbody>
</table>

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**10. STABILITY AND REACTIVITY**

**Chemical stability**
Stable under recommended storage conditions.

**Possibility of hazardous reactions**
no data available

**Conditions to avoid**
Heat. Avoid moisture.
Materials to avoid
Organic materials, Phosphorus, Powdered metals

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Chromium oxides  Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION

Acute toxicity

**Oral LD50**
LD50 Oral - rat - male and female - 52 mg/kg

**Inhalation LC50**
LC50 Inhalation - rat - male - 4 h - 217 mg/m3

**Dermal LD50**
LD50 Dermal - rabbit - male and female - 57 mg/kg

**Other information on acute toxicity**
no data available

**Skin corrosion/irritation**
Skin - rabbit - Corrosive - 24 h

**Serious eye damage/eye irritation**
Eyes - rabbit - Corrosive to eyes

**Respiratory or skin sensitisation**
no data available

**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.

Human carcinogen.

IARC: 1 - Group 1: Carcinogenic to humans (Chromium trioxide)

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: Known to be human carcinogen (Chromium trioxide)

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**
Suspected human reproductive toxicant

Specific target organ toxicity - single exposure (Globally Harmonized System)
no data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System)
no data available

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
Toxic if absorbed through skin. Causes skin burns.

Eyes
Causes eye burns. Causes severe eye burns.

**Signs and Symptoms of Exposure**
Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., Cough, Shortness of breath, Headache, Nausea

Synergistic effects
no data available

**Additional Information**
RTECS: GB6650000

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**12. ECOLOGICAL INFORMATION**

**Toxicity**

<table>
<thead>
<tr>
<th>Material Type</th>
<th>LC50</th>
<th>EC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50 - Tilapia mossambica</td>
<td>21.05</td>
<td>21.05 mg/l - 96.0 h</td>
</tr>
<tr>
<td>LC0 - Leuciscus idus (Golden orfe)</td>
<td>100</td>
<td>100 mg/l - 48.0 h</td>
</tr>
<tr>
<td>EC50 - Daphnia magna (Water flea)</td>
<td>0.8</td>
<td>0.8 mg/l - 48 h</td>
</tr>
</tbody>
</table>

**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**
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Very toxic to aquatic life with long lasting effects.

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**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: 1755  Class: 8  Packing group: II
Proper shipping name: Chromic Acid Solution
Reportable Quantity (RQ): 10 lbs
Marine pollutant: Yes
Poison Inhalation Hazard: No

**IMDG**
UN number: 1755  Class: 8  Packing group: II
Proper shipping name: Chromic Acid Solution
EMS-No: F-A, S-Q
Marine pollutant: Yes

**IATA**
UN number: 1755  Class: 8  Packing group: II
Proper shipping name: Chromic Acid Solution
15. REGULATORY INFORMATION

OSHA Hazards
Oxidizer, Carcinogen, Target Organ Effect, Highly toxic by inhalation, Toxic by ingestion, Toxic by skin absorption, Corrosive, 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
The following components are subject to reporting levels established by SARA Title III, Section 313:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Revision Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chromium Trioxide</td>
<td>1333-82-0</td>
<td>1993-04-24</td>
</tr>
</tbody>
</table>

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

Massachusetts Right To Know Components
Chromium Trioxide 1333-82-0 1993-04-24

Pennsylvania Right To Know Components
Chromium Trioxide 1333-82-0 1993-04-24

New Jersey Right To Know Components
Chromium Trioxide 1333-82-0 1993-04-24

California Prop. 65 Components
WARNING! This product contains a chemical known to the State of California to cause cancer.

Chromium Trioxide 1333-82-0 1993-04-24

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.