1. PRODUCT AND COMPANY IDENTIFICATION

Product Name              Chromerge cleaning solution
Cat No.                    C577-12; C577-12a; S799641
Synonyms                   None
Recommended Use            Laboratory chemicals

Company                     Emergency Telephone Number
Fisher Scientific           CHEMTREC®, Inside the USA: 800-424-9300
One Reagent Lane            CHEMTREC®, Outside the USA: 703-527-3887
Fair Lawn, NJ 07410         
Tel: (201) 796-7100

2. HAZARDS IDENTIFICATION

DANGER!
Cancer hazard. May be fatal if inhaled. Oxidizer: Contact with combustible/organic material may cause fire. Toxic in contact with skin and if swallowed. Causes severe burns by all exposure routes. May cause heritable genetic damage. May cause allergic respiratory and skin reaction. Danger of serious damage to health by prolonged exposure. Possible risk of impaired fertility. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Appearance: Red brown     Physical State: Liquid     Odor: odorless

Target Organs:             Respiratory system, Eyes, Skin, Gastrointestinal tract (GI), Central nervous system (CNS), Blood, Liver

Potential Health Effects

Acute Effects
Principle Routes of Exposure

Eyes
Causes severe burns.

Skin
Toxic in contact with skin. Causes severe burns. May produce an allergic reaction.

Inhalation
May be fatal if inhaled. Causes severe burns. May produce an allergic reaction.

Ingestion
Toxic if swallowed. Causes severe burns.

Chronic Effects
May cause cancer. May cause heritable genetic damage. Possible risk of impaired fertility. Danger of serious damage to health by prolonged exposure. Repeated contact may cause allergic reactions in very susceptible persons.
See Section 11 for additional Toxicological information.

**Aggravated Medical Conditions**

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Haz/Non-haz</th>
<th>Component</th>
<th>CAS-No</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Water</td>
<td>7732-18-5</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Chromium trioxide (CrO3)</td>
<td>1333-82-0</td>
<td>50</td>
</tr>
</tbody>
</table>

### 4. FIRST AID MEASURES

**Eye Contact**
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.

**Skin Contact**
Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.

**Inhalation**
Move to fresh air. If breathing is difficult, give oxygen. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with a respiratory medical device. Immediate medical attention is required.

**Ingestion**
Do not induce vomiting. Call a physician or Poison Control Center immediately.

**Notes to Physician**
Treat symptomatically.

### 5. FIRE-FIGHTING MEASURES

**Flash Point**
Not applicable

**Method**
No information available.

**Autoignition Temperature**
No information available.

**Explosion Limits**
No data available

**Upper**
No data available

**Lower**

**Suitable Extinguishing Media**
CO₂, dry chemical, dry sand, alcohol-resistant foam.

**Unsuitable Extinguishing Media**
No information available.

**Hazardous Combustion Products**
No information available.

**Sensitivity to mechanical impact**
No information available.

**Sensitivity to static discharge**
No information available.

**Specific Hazards Arising from the Chemical**
Oxidizer: Contact with combustible/organic material may cause fire. May ignite combustibles (wood paper, oil, clothing, etc.). Thermal decomposition can lead to release of irritating gases and vapors.
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

Personal Precautions
Use personal protective equipment. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Ensure adequate ventilation. Do not get in eyes, on skin, or on clothing.

Environmental Precautions
Should not be released into the environment.

Methods for Containment and Clean Up
Keep combustibles (wood, paper, oil, etc) away from spilled material. Soak up with inert absorbent material. Keep in suitable and closed containers for disposal.

Handling and Storage
Handle only under a chemical fume hood. Wear personal protective equipment. Ensure adequate ventilation. Do not breathe vapors or spray mist. Keep away from clothing and other combustible materials. Do not get in eyes, on skin, or on clothing.

Store in a dry, cool and well-ventilated place. Do not store near combustible materials.

Exposure Controls / Personal Protection

Engineering Measures
Use only under a chemical fume hood. Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Exposure Guidelines

<table>
<thead>
<tr>
<th>Component</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>NIOSH IDLH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chromium trioxide (CrO3)</td>
<td>(Vacated) Ceiling: 0.1 mg/m³ Ceiling: 0.1 mg/m³</td>
<td>TWA: 0.001 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component</th>
<th>Quebec Mexico OEL (TWA)</th>
<th>Ontario TWA EV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chromium trioxide (CrO3)</td>
<td>TWA: 0.05 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>

NIOSH IDLH: Immediately Dangerous to Life or Health

Personal Protective Equipment

- Eye/face Protection: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166
- Skin and body protection: Wear appropriate protective gloves and clothing to prevent skin exposure
- Respiratory Protection: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced

Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>NFPA Health</td>
<td>3</td>
</tr>
<tr>
<td>Flammability</td>
<td>0</td>
</tr>
<tr>
<td>Instability</td>
<td>2</td>
</tr>
<tr>
<td>Physical hazards</td>
<td>OX</td>
</tr>
</tbody>
</table>

Revision Date: 23-Dec-2009
9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical State</td>
<td>Liquid</td>
</tr>
<tr>
<td>Appearance</td>
<td>Red brown</td>
</tr>
<tr>
<td>Odor</td>
<td>odorless</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>No information available.</td>
</tr>
<tr>
<td>pH</td>
<td>2.0 Acidic</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>No information available.</td>
</tr>
<tr>
<td>Vapor Density</td>
<td>No information available.</td>
</tr>
<tr>
<td>Viscosity</td>
<td>No information available.</td>
</tr>
<tr>
<td>Boiling Point/Range</td>
<td>&gt;100°C / 212°F</td>
</tr>
<tr>
<td>Melting Point/Range</td>
<td>&gt;0°C / 32°F</td>
</tr>
<tr>
<td>Decomposition temperature °C</td>
<td>250°C</td>
</tr>
<tr>
<td>Flash Point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>&gt; 1 (Ether = 1.0)</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>1.5</td>
</tr>
<tr>
<td>Solubility</td>
<td>Soluble in water</td>
</tr>
<tr>
<td>log Pow</td>
<td>No data available</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>99.99</td>
</tr>
<tr>
<td>Molecular Formula</td>
<td>CrO3</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

Stability
Oxidizer: Contact with combustible/organic material may cause fire.

Conditions to Avoid

Incompatible Materials
Reducing agents, Strong bases, Alcohols, Metals

Hazardous Decomposition Products
Thermal decomposition can lead to release of irritating gases and vapors

Hazardous Polymerization
Hazardous polymerization does not occur

Hazardous Reactions
None under normal processing.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity
Product Information
No acute toxicity information is available for this product

Component Information

<table>
<thead>
<tr>
<th>Component</th>
<th>LD50 Oral</th>
<th>LD50 Dermal</th>
<th>LC50 Inhalation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>90 mL/kg (Rat)</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
<tr>
<td>Chromium trioxide (CrO3)</td>
<td>50 mg/kg (Rat)</td>
<td>20 mg/kg (Rabbit)</td>
<td>0.217 mg/L (Rat) 4 h</td>
</tr>
<tr>
<td></td>
<td></td>
<td>55 mg/kg (Rat)</td>
<td></td>
</tr>
</tbody>
</table>

Irritation
Causes severe burns by all exposure routes

Toxicologically Synergistic Products
No information available.
Chronic Toxicity

Carcinogenicity

The table below indicates whether each agency has listed any ingredient as a carcinogen.

<table>
<thead>
<tr>
<th>Component</th>
<th>ACGIH</th>
<th>IARC</th>
<th>NTP</th>
<th>OSHA</th>
<th>Mexico</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chromium trioxide (CrO3)</td>
<td>Not listed</td>
<td>Group 1</td>
<td>Known</td>
<td>X</td>
<td>Not listed</td>
</tr>
</tbody>
</table>

IARC: (International Agency for Research on Cancer)
Group 1 - Carcinogenic to Humans
Group 2A - Probably Carcinogenic to Humans
Group 2B - Possibly Carcinogenic to Humans

NTP: (National Toxicity Program)
Known - Known Carcinogen
Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen

Sensitization
May cause sensitization by inhalation and skin contact

Mutagenic Effects
Mutagenic effects have occurred in humans.

Reproductive Effects
Experiments have shown reproductive toxicity effects on laboratory animals.

Developmental Effects
Developmental effects have occurred in experimental animals.

Teratogenicity
Teratogenic effects have occurred in experimental animals..

Other Adverse Effects
Tumorigenic effects have been reported in experimental animals.. See actual entry in RTECS for complete information.

Endocrine Disruptor Information
No information available

12. ECOLOGICAL INFORMATION

Ecotoxicity
Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Persistence and Degradability
No information available

Bioaccumulation/ Accumulation
No information available

Mobility
No information available

13. DISPOSAL CONSIDERATIONS

Waste Disposal Methods
Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification

14. TRANSPORT INFORMATION
14. TRANSPORT INFORMATION

DOT

UN-No  UN1755
Proper Shipping Name  CHROMIC ACID SOLUTION
Hazard Class  8
Packing Group  II

TDG

UN-No  UN1755
Proper Shipping Name  CHROMIC ACID SOLUTION
Hazard Class  8
Packing Group  II

IATA

UN-No  UN1755
Proper Shipping Name  CHROMIC ACID SOLUTION
Hazard Class  8
Packing Group  II

IMDG/IMO

UN-No  UN1755
Proper Shipping Name  CHROMIC ACID SOLUTION
Hazard Class  8
Packing Group  II

15. REGULATORY INFORMATION

International Inventories

<table>
<thead>
<tr>
<th>Component</th>
<th>TSCA</th>
<th>DSL</th>
<th>NDSL</th>
<th>EINECS</th>
<th>ELINCS</th>
<th>NLP</th>
<th>PICCS</th>
<th>ENCS</th>
<th>AICS</th>
<th>CHINA</th>
<th>KECL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>231-791-2</td>
<td>-</td>
<td>X</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>KE-35400</td>
<td></td>
</tr>
<tr>
<td>Chromium trioxide (CrO3)</td>
<td>R</td>
<td>X</td>
<td>-</td>
<td>215-607-8</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>KE-06020</td>
<td></td>
</tr>
</tbody>
</table>

Legend:
- X - Listed
- E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
- F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
- N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
- P - Indicates a commenced PMN substance
- R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
- S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
- T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b)

<table>
<thead>
<tr>
<th>Component</th>
<th>TSCA 12(b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chromium trioxide (CrO3)</td>
<td>Section 6</td>
</tr>
</tbody>
</table>

SARA 313

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>Weight %</th>
<th>SARA 313 - Threshold Values %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chromium trioxide (CrO3)</td>
<td>1333-82-0</td>
<td>50</td>
<td>0.1</td>
</tr>
</tbody>
</table>

SARA 311/312 Hazardous Categorization
- Acute Health Hazard: No
- Chronic Health Hazard: No
- Fire Hazard: No
- Sudden Release of Pressure Hazard: No
- Reactive Hazard: No

Clean Water Act
Not applicable

Clean Air Act
Not applicable

OSHA

<table>
<thead>
<tr>
<th>Component</th>
<th>Specifically Regulated Chemicals</th>
<th>Highly Hazardous Chemicals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chromium trioxide (CrO3)</td>
<td>2.5 µg/m³ Action Level</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>5 µg/m³ TWA</td>
<td></td>
</tr>
</tbody>
</table>

CERCLA
Not Applicable

California Proposition 65
This product contains the following Proposition 65 chemicals:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>California Prop. 65</th>
<th>Prop 65 NSRL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chromium trioxide (CrO3)</td>
<td>1333-82-0</td>
<td>Carcinogen</td>
<td>-</td>
</tr>
</tbody>
</table>

State Right-to-Know

<table>
<thead>
<tr>
<th>Component</th>
<th>Massachusetts</th>
<th>New Jersey</th>
<th>Pennsylvania</th>
<th>Illinois</th>
<th>Rhode Island</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chromium trioxide (CrO3)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>X</td>
</tr>
</tbody>
</table>

U.S. Department of Transportation
Reportable Quantity (RQ): N
DOT Marine Pollutant    N
DOT Severe Marine Pollutant    N

**U.S. Department of Homeland Security**
This product does not contain any DHS chemicals.

**Other International Regulations**

**Mexico - Grade**
No information available

**Canada**

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

**WHMIS Hazard Class**
- C  Oxidizing materials
- D1A  Very toxic materials
- D2A  Very toxic materials
- D2B  Toxic materials
- E  Corrosive material

---

### 16. OTHER INFORMATION

**Prepared By**
Regulatory Affairs
Thermo Fisher Scientific
Tel: (412) 490-8929

**Creation Date**
23-Dec-2009

**Print Date**
23-Dec-2009

**Revision Summary**
“***”, and red text indicates revision

**Disclaimer**
The information provided on this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of MSDS