SAFETY DATA SHEET

1. Identification

Product identifier                  CHROMIUM, 1000 ppm STANDARD SOLUTION
Other means of identification
Product code                        747
Recommended use                    professional, scientific and technical activities: other professional, scientific and technical activities
Recommended restrictions           None known.
Manufacturer/Importer/Supplier/Distributor information
Manufacturer                        GFS Chemicals, Inc.
Company name                        GFS Chemicals, Inc.
Address                             P.O. Box 245
Powell, OH 43065
Telephone                          Phone 740-881-5501
Toll Free                          800-858-9682
Fax                                740-881-5989
Website                            www.gfschemicals.com
E-mail                             service@gfschemicals.com
Emergency phone number             Emergency Assistance Chemtrec 800-424-9300

2. Hazard(s) identification

Physical hazards                   Not classified.
Health hazards                      
Acute toxicity, inhalation          Category 4
Sensitization, respiratory          Category 1
Sensitization, skin                 Category 1
Germ cell mutagenicity              Category 1
Carcinogenicity                     Category 1A
Reproductive toxicity               Category 1

Environmental hazards              Hazardous to the aquatic environment, acute hazard Category 2
Hazardous to the aquatic environment, long-term hazard Category 3

OSHA defined hazards                Not classified.

Label elements

Signal word                        Danger
Hazard statement                   May cause an allergic skin reaction. Harmful if inhaled. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause genetic defects. May cause cancer. May damage fertility or the unborn child. Toxic to aquatic life. Harmful to aquatic life with long lasting effects.
Precautionary statement
Prevention                         Do not handle until all safety precautions have been read and understood. Avoid breathing mist or vapor. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection. In case of inadequate ventilation wear respiratory protection.
Response                           If inhaled: Remove person to fresh air and keep comfortable for breathing. IF ON SKIN: Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Call a POISON CENTER or doctor/physician if you feel unwell. Wash contaminated clothing before reuse.
Storage                            Store locked up.
Disposal                           Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.
### 3. Composition/information on ingredients

#### Mixtures

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Common name and synonyms</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>WATER</td>
<td>POTASSIUM BICHROMATE</td>
<td>7732-18-5</td>
<td>99.72</td>
</tr>
<tr>
<td>POTASSIUM DICHROMATE</td>
<td>POTASSIUM BICHROMATE</td>
<td>7778-50-9</td>
<td>0.28</td>
</tr>
</tbody>
</table>

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

### 4. First-aid measures

#### Inhalation

Remove victim to fresh air and keep at rest in a position comfortable for breathing. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.

#### Skin contact

Remove contaminated clothing immediately and wash skin with soap and water. In case of eczema or other skin disorders: Seek medical attention and take along these instructions.

#### Eye contact

Rinse with water. Get medical attention if irritation develops and persists.

#### Ingestion

Rinse mouth. Get medical attention if symptoms occur.

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

Difficulty in breathing. May cause an allergic skin reaction. Dermatitis. Rash.

#### Indication of immediate medical attention and special treatment needed

Provide general supportive measures and treat symptomatically. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

#### General information

IF exposed or concerned: Get medical advice/attention. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before reuse.

### 5. Fire-fighting measures

#### Suitable extinguishing media

Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).

#### Unsuitable extinguishing media

Do not use water jet as an extinguisher, as this will spread the fire.

#### Specific hazards arising from the chemical

During fire, gases hazardous to health may be formed.

#### Special protective equipment and precautions for firefighters

Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

#### Fire fighting equipment/instructions

Move containers from fire area if you can do so without risk.

#### Specific methods

Use standard firefighting procedures and consider the hazards of other involved materials.

#### General fire hazards

No unusual fire or explosion hazards noted.

### 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 clean-up. Avoid inhalation of vapors and spray mists. 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 protection, see section 8 of the SDS.

#### Methods and materials for containment and cleaning up

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. 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: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.
Environmental precautions
Avoid release to the environment. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground. Inform appropriate managerial or supervisory personnel of all environmental releases.

7. Handling and storage
Precautions for safe handling
Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid inhalation of vapors and spray mists. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Pregnant or breastfeeding women must not handle this product. Should be handled in closed systems, if possible. Use only outdoors or in a well-ventilated area. Wear appropriate personal protective equipment. Avoid release to the environment. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities
Store locked up. Store in original tightly closed container. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection
Occupational exposure limits

<table>
<thead>
<tr>
<th>US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)</th>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>POTASSIUM DICHROMATE (CAS 7778-50-9)</td>
<td>TWA</td>
<td></td>
<td>0.005 mg/m3</td>
</tr>
<tr>
<td>US. OSHA Table Z-2 (29 CFR 1910.1000)</td>
<td>Components</td>
<td>Type</td>
<td>Value</td>
</tr>
<tr>
<td>POTASSIUM DICHROMATE (CAS 7778-50-9)</td>
<td>Ceiling</td>
<td></td>
<td>0.1 mg/m3</td>
</tr>
<tr>
<td>US. ACGIH Threshold Limit Values Components</td>
<td>Type</td>
<td>Value</td>
<td></td>
</tr>
<tr>
<td>POTASSIUM DICHROMATE (CAS 7778-50-9)</td>
<td>TWA</td>
<td>0.05 mg/m3</td>
<td></td>
</tr>
<tr>
<td>US. NIOSH: Pocket Guide to Chemical Hazards Components</td>
<td>Value</td>
<td></td>
<td></td>
</tr>
<tr>
<td>POTASSIUM DICHROMATE (CAS 7778-50-9)</td>
<td>TWA</td>
<td>0.001 mg/m3</td>
<td></td>
</tr>
</tbody>
</table>

Biological limit values

<table>
<thead>
<tr>
<th>US. ACGIH. BEIs. Biological Exposure Indices Components</th>
<th>Value</th>
<th>Determinant</th>
<th>Specimen</th>
<th>Sampling Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>POTASSIUM DICHROMATE (CAS 7778-50-9)</td>
<td>25 µg/l</td>
<td>Total chromium</td>
<td>Urine</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>10 µg/l</td>
<td>Total chromium</td>
<td>Urine</td>
<td>*</td>
</tr>
</tbody>
</table>

* - For sampling details, please see the source document.

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. General ventilation normally adequate.

Individual protection measures, such as personal protective equipment

<table>
<thead>
<tr>
<th>Protection</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye/face protection</td>
<td>Chemical respirator with organic vapor cartridge and full facepiece.</td>
</tr>
<tr>
<td>Skin protection Hand protection</td>
<td>Wear appropriate chemical resistant gloves.</td>
</tr>
<tr>
<td>Other</td>
<td>Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.</td>
</tr>
<tr>
<td>Respiratory protection</td>
<td>Chemical respirator with organic vapor cartridge and full facepiece.</td>
</tr>
<tr>
<td>Thermal hazards</td>
<td>Wear appropriate thermal protective clothing, when necessary.</td>
</tr>
<tr>
<td>General hygiene</td>
<td>C</td>
</tr>
</tbody>
</table>
Form: Liquid.
Color: Red-orange.
Odor: Not available.
Odor threshold: Not available.
pH: Not available.
Melting point/freezing point: 32 °F (0 °C) estimated
Initial boiling point and boiling range: 212 °F (100 °C) estimated
Flash point: Not available.
Evaporation rate: Not available.
Flammability (solid, gas): Not available.
Upper/lower flammability or explosive limits
  Flammability limit - lower (%): Not available.
  Flammability limit - upper (%): Not available.
  Explosive limit - lower (%): Not available.
  Explosive limit - upper (%): Not available.
Vapor pressure: Not available.
Vapor density: Not available.
Relative density: Not available.
Solubility(ies)
  Solubility (water): Not available.
Partition coefficient (n-octanol/water): Not available.
Auto-ignition temperature: Not available.
Decomposition temperature: Not available.
Viscosity: Not available.
Other information
  Density: 1.005 g/cm3 estimated
  Percent volatile: 99.72 % estimated
  Specific gravity: 1 estimated

10. Stability and reactivity
Reactivity: The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability: Material is stable under normal conditions.
Possibility of hazardous reactions: No dangerous reaction known under conditions of normal use.
Conditions to avoid: Contact with incompatible materials.
Incompatible materials: Strong oxidizing agents.
Hazardous decomposition products: No hazardous decomposition products are known.

11. Toxicological information
Information on likely routes of exposure
  Inhalation: Harmful if inhaled. May cause allergy or asthma symptoms or breathing difficulties if inhaled.
  Skin contact: May cause an allergic skin reaction.
  Eye contact: Direct contact with eyes may cause temporary irritation.
  Ingestion: Expected to be a low ingestion hazard.
Symptoms related to the physical, chemical and toxicological characteristics
  Difficulty in breathing. May cause an allergic skin reaction. Dermatitis. Rash.
Information on toxicological effects
  Acute toxicity: Harmful if inhaled. May cause an allergic skin reaction.
### CHROMIUM, 1000 ppm STANDARD SOLUTION (CAS Mixture)

<table>
<thead>
<tr>
<th>Test Results</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dermal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>New Zealand rabbit</td>
<td>99999 mg/kg</td>
</tr>
<tr>
<td>Inhalation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC50</td>
<td>Fischer 344 rat</td>
<td>10.67 mg/l</td>
</tr>
<tr>
<td>Rat</td>
<td></td>
<td>10.3571 mg/l, 4 Hours estimated</td>
</tr>
<tr>
<td>Oral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Mouse</td>
<td>63333 mg/kg</td>
</tr>
<tr>
<td>Rat</td>
<td></td>
<td>6071.4287 mg/kg estimated</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Mouse</td>
<td>13214.2861 mg/kg estimated</td>
</tr>
</tbody>
</table>

### POTASSIUM DICHROMATE (CAS 7778-50-9)

<table>
<thead>
<tr>
<th>Test Results</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dermal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>New Zealand rabbit</td>
<td>403 - 490 mg/kg</td>
</tr>
<tr>
<td>Rabbit</td>
<td></td>
<td>403 mg/kg</td>
</tr>
<tr>
<td>Inhalation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC50</td>
<td>Fischer 344 rat</td>
<td>0.035 mg/l, 4 Hours</td>
</tr>
<tr>
<td>Rat</td>
<td></td>
<td>0.029 mg/l, 4 Hours</td>
</tr>
<tr>
<td>Oral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Mouse</td>
<td>190 mg/kg</td>
</tr>
<tr>
<td>Rat</td>
<td></td>
<td>17 - 26 mg/kg</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Mouse</td>
<td>37 mg/kg</td>
</tr>
</tbody>
</table>

* Estimates for product may be based on additional component data not shown.

**Skin corrosion/irritation**
- Prolonged skin contact may cause temporary irritation.

**Serious eye damage/eye irritation**
- Direct contact with eyes may cause temporary irritation.

**Respiratory or skin sensitization**
- **Respiratory sensitization**
  - May cause allergy or asthma symptoms or breathing difficulties if inhaled.
- **Skin sensitization**
  - May cause an allergic skin reaction.
- **Germ cell mutagenicity**
  - May cause genetic defects.
- **Carcinogenicity**
  - May cause cancer.

**IARC Monographs. Overall Evaluation of Carcinogenicity**
- POTASSIUM DICHROMATE (CAS 7778-50-9) 1 Carcinogenic to humans.

**US. National Toxicology Program (NTP) Report on Carcinogens**
- POTASSIUM DICHROMATE (CAS 7778-50-9) Known To Be Human Carcinogen.

**Reproductive toxicity**
- May damage fertility or the unborn child.

**Specific target organ toxicity**
- **single exposure**
  - Not classified.
- **repeated exposure**
  - Not classified.

**Aspiration hazard**
- Not available.

**Chronic effects**
- Prolonged inhalation may be harmful. Prolonged exposure may cause chronic effects.

### 12. Ecological information

**Ecotoxicity**
- Toxic to aquatic life. Harmful to aquatic life with long lasting effects.
### Product Test Results

<table>
<thead>
<tr>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Aquatic</strong></td>
<td></td>
</tr>
<tr>
<td>Crustacea</td>
<td>EC50 Daphnia</td>
</tr>
<tr>
<td>Fish</td>
<td>LC50 Fish</td>
</tr>
<tr>
<td><strong>Components</strong></td>
<td><strong>Species</strong></td>
</tr>
<tr>
<td><strong>POTASSIUM DICHROMATE (CAS 7778-50-9)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Aquatic</strong></td>
<td></td>
</tr>
<tr>
<td>Crustacea</td>
<td>EC50 Water flea (Moina australiensis)</td>
</tr>
<tr>
<td>Fish</td>
<td>LC50 Atlantic silverside (Menidia menidia)</td>
</tr>
</tbody>
</table>

* Estimates for product may be based on additional component data not shown.

**Persistence and degradability**
No data is available on the degradability of this product.

**Bioaccumulative potential**
No data available.

**Mobility in soil**
No data available.

**Other adverse effects**
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

**Disposal instructions**
Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

**Local disposal regulations**
Dispose in accordance with all applicable regulations.

**Hazardous waste code**
The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

**Waste from residues / unused products**
Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

**Contaminated packaging**
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. Transport information

**DOT**
Not regulated as dangerous goods.

**IATA**
Not regulated as dangerous goods.

**IMDG**
Not regulated as dangerous goods.

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**
Not established.

### 15. Regulatory information

**US federal regulations**
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

**TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)**
POTASSIUM DICHROMATE (CAS 7778-50-9) 0.1 % Annual Export Notification required.

**CERCLA Hazardous Substance List (40 CFR 302.4)**
POTASSIUM DICHROMATE (CAS 7778-50-9) Listed.

**SARA 304 Emergency release notification**
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 - No
SARA 302 Extremely hazardous substance
   Not listed.
SARA 311/312 Hazardous chemical
   No
SARA 313 (TRI reporting)
   Chemical name   CAS number   % by wt.
   POTASSIUM DICHROMATE     7778-50-9   0.28

Other federal regulations
Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
   POTASSIUM DICHROMATE (CAS 7778-50-9)
Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)
   Not regulated.
Safe Drinking Water Act (SDWA)
   Not regulated.

US state regulations
US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)
   Not listed.
US. Massachusetts RTK - Substance List
   POTASSIUM DICHROMATE (CAS 7778-50-9)
US. New Jersey Worker and Community Right-to-Know Act
   POTASSIUM DICHROMATE (CAS 7778-50-9)
US. Pennsylvania Worker and Community Right-to-Know Law
   POTASSIUM DICHROMATE (CAS 7778-50-9)
US. Rhode Island RTK
   Not regulated.
US. California Proposition 65
   WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.
   US - California Proposition 65 - CRT: Listed date/Carcinogenic substance
      POTASSIUM DICHROMATE (CAS 7778-50-9) Listed: February 27, 1987
   US - California Proposition 65 - CRT: Listed date/Developmental toxin
      POTASSIUM DICHROMATE (CAS 7778-50-9) Listed: December 19, 2008
   US - California Proposition 65 - CRT: Listed date/Female reproductive toxin
      POTASSIUM DICHROMATE (CAS 7778-50-9) Listed: December 19, 2008
   US - California Proposition 65 - CRT: Listed date/Male reproductive toxin
      POTASSIUM DICHROMATE (CAS 7778-50-9) Listed: December 19, 2008

International Inventories
   Country(s) 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 in China (IECSC) Yes
   Europe                 European Inventory of Existing Commercial Chemical Substances (EINECS) Yes
   Europe                 European List of Notified Chemical Substances (ELINCS) No
   Japan                  Inventory of Existing and New Chemical Substances (ENCS) Yes
   Korea                  Existing Chemicals List (ECL) No
   New Zealand            New Zealand Inventory Yes
   Philippines            Philippine Inventory of Chemicals and Chemical Substances (PICCS) No
   United States & Puerto Rico Toxic Substances Control Act (TSCA) Inventory Yes

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

16. Other information, including date of preparation or last revision
   Issue date: June-14-2015
   Version #: 01
Disclaimer
GFS Chemicals cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.

Revision Information
Composition / Information on Ingredients: Ingredients
Physical & Chemical Properties: Multiple Properties