

1. Identification

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|---|--|-----------------------|
| 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 | | |
| Company name | GFS Chemicals, Inc. | |
| Address | P.O. Box 245 Powell, OH 43065 United States | |
| 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. | |

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|--|-------------|
| Hazard(s) not otherwise classified (HNOC) | None known. |
| Supplemental information | None. |

3. Composition/information on ingredients

Mixtures

| Chemical name | Common name and synonyms | CAS number | % |
|----------------------|--------------------------|------------|-------|
| WATER | | 7732-18-5 | 99.72 |
| POTASSIUM DICHROMATE | POTASSIUM BICHROMATE | 7778-50-9 | 0.28 |

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

4. First-aid measures

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| 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

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|--|---|
| 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

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| 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 | <p>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.</p> <p>Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.</p> <p>Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.</p> |

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

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

| Components | Type | Value |
|---|------|-------------------------|
| POTASSIUM DICHROMATE (CAS 7778-50-9) | TWA | 0.005 mg/m ³ |

US. OSHA Table Z-2 (29 CFR 1910.1000)

| Components | Type | Value |
|---|---------|-----------------------|
| POTASSIUM DICHROMATE (CAS 7778-50-9) | Ceiling | 0.1 mg/m ³ |

US. ACGIH Threshold Limit Values

| Components | Type | Value |
|---|------|------------------------|
| POTASSIUM DICHROMATE (CAS 7778-50-9) | TWA | 0.05 mg/m ³ |

US. NIOSH: Pocket Guide to Chemical Hazards

| Components | Type | Value |
|---|------|-------------------------|
| POTASSIUM DICHROMATE (CAS 7778-50-9) | TWA | 0.001 mg/m ³ |

Biological limit values

US. ACGIH. BEIs. Biological Exposure Indices

| Components | Value | Determinant | Specimen | Sampling Time |
|---|---------|----------------|----------|---------------|
| POTASSIUM DICHROMATE (CAS 7778-50-9) | 25 µg/l | Total chromium | Urine | * |
| | 10 µg/l | Total chromium | Urine | * |

* - 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

Eye/face protection Chemical respirator with organic vapor cartridge and full facepiece.

Skin protection

Hand protection Wear appropriate chemical resistant gloves.

Other

Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.

Respiratory protection Chemical respirator with organic vapor cartridge and full facepiece.

Thermal hazards Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations When using, do not eat, drink or smoke. 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 contaminants. Contaminated work clothing should not be allowed out of the workplace.

9. Physical and chemical properties

Appearance

Physical state Liquid.

Material name: CHROMIUM, 1000 ppm STANDARD SOLUTION

747

Version #: 01

Revision date: Issue date: June-14-2015

3 / 8

| | |
|---|-----------------------------------|
| 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/cm ³ estimated |
| Percent volatile | 99.72 % estimated |
| Specific gravity | 1 estimated |

10. Stability and reactivity

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|---|---|
| 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

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|---------------------|--|
| 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.

| Product | Species | Test Results |
|--|--------------------|---------------------------------|
| CHROMIUM, 1000 ppm STANDARD SOLUTION (CAS Mixture) | | |
| Acute | | |
| <i>Dermal</i> | | |
| LD50 | New Zealand rabbit | 99999 mg/kg |
| <i>Inhalation</i> | | |
| LC50 | Fischer 344 rat | 10.67 mg/l |
| | Rat | 10.3571 mg/l, 4 Hours estimated |
| | Rat | 10.3571 mg/l, 4 Hours estimated |
| <i>Oral</i> | | |
| LD50 | Mouse | 63333 mg/kg |
| | Rat | 6071.4287 mg/kg estimated |
| <i>Other</i> | | |
| LD50 | Mouse | 13214.2861 mg/kg estimated |
| Components | Species | Test Results |

| | | |
|--------------------------------------|--------------------|---------------------|
| POTASSIUM DICHROMATE (CAS 7778-50-9) | | |
| Acute | | |
| <i>Dermal</i> | | |
| LD50 | New Zealand rabbit | 403 - 490 mg/kg |
| | Rabbit | 403 mg/kg |
| <i>Inhalation</i> | | |
| LC50 | Fischer 344 rat | 0.035 mg/l, 4 Hours |
| | | 0.029 mg/l, 4 Hours |
| | Rat | 0.029 mg/l, 4 Hours |
| <i>Oral</i> | | |
| LD50 | Mouse | 190 mg/kg |
| | Rat | 17 - 26 mg/kg |
| <i>Other</i> | | |
| LD50 | Mouse | 37 mg/kg |

* 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.

Specific target organ toxicity - 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 | Species | | Test Results |
|--|---------|---------------------------------------|-------------------------------------|
| CHROMIUM, 1000 ppm STANDARD SOLUTION (CAS Mixture) | | | |
| Aquatic | | | |
| Crustacea | EC50 | Daphnia | 1249.5298 mg/l, 48 hours estimated |
| Fish | LC50 | Fish | 29728.8242 mg/l, 96 hours estimated |
| Components | Species | | Test Results |
| POTASSIUM DICHROMATE (CAS 7778-50-9) | | | |
| Aquatic | | | |
| Crustacea | EC50 | Water flea (Moina australiensis) | 0.0184 - 0.0258 mg/l, 48 hours |
| Fish | LC50 | Atlantic silverside (Menidia menidia) | 10.497 - 14.995 mg/l, 96 hours |

* 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

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| 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.
All components are on the U.S. EPA TSCA Inventory List.

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 No
Hazardous chemical**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

Material name: CHROMIUM, 1000 ppm STANDARD SOLUTION

747

Version #: 01

Revision date: Issue date: June-14-2015

7 / 8

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