1 Identification

· **Product identifier**

· **Trade name:** Chromium+6 10000 μg/mL in H2O

· **Article number:** 10M12-7

· **Details of the supplier of the safety data sheet**

· **Manufacturer/Supplier:** High-Purity Standards
  7221 Investment Drive, North Charleston, SC 29418 United States
  Telephone: +1-843-767-7900
  Fax: +1-843-767-7906
  highpuritystandards.com
  Email: info@highpuritystandards.com

· **Information department:** Product safety department

· **Emergency telephone number:**
  INFOTRAC
  Emergency telephone numbers 1-800-535-5053
  Other emergency telephone numbers 1-352-323-3500

2 Hazard(s) identification

· **Classification of the substance or mixture**

  GHS06 Skull and crossbones

  **Acute Tox. 3 H331** Toxic if inhaled.

  GHS08 Health hazard

  **Resp. Sens. 1 H334** May cause allergy or asthma symptoms or breathing difficulties if inhaled.
  **Muta. 1B H340** May cause genetic defects.
  **Carc. 1B H350** May cause cancer.
  **Repr. 1B H360** May damage fertility or the unborn child.
  **STOT RE 1 H372** Causes damage to organs through prolonged or repeated exposure.

  GHS07

  **Skin Irrit. 2 H315** Causes skin irritation.
  **Eye Irrit. 2A H319** Causes serious eye irritation.
  **Skin Sens. 1 H317** May cause an allergic skin reaction.

· **Label elements**

· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
Trade name: Chromium+6 10000 μg/mL in H2O

· Hazard pictograms

GHS06  GHS08

· Signal word Danger

· Hazard-determining components of labeling:
  potassium dichromate

· Hazard statements
  H331 Toxic if inhaled.
  H315 Causes skin irritation.
  H319 Causes serious eye irritation.
  H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
  H317 May cause an allergic skin reaction.
  H340 May cause genetic defects.
  H350 May cause cancer.
  H360 May damage fertility or the unborn child.
  H372 Causes damage to organs through prolonged or repeated exposure.

· Precautionary statements
  Obtain special instructions before use.
  Do not handle until all safety precautions have been read and understood.
  Do not breathe dust/fume/gas/mist/vapors/spray.
  Wash thoroughly after handling.
  Do not eat, drink or smoke when using this product.
  Use only outdoors or in a well-ventilated area.
  Contaminated work clothing must not be allowed out of the workplace.
  Wear protective gloves/protective clothing/eye protection/face protection.
  [In case of inadequate ventilation] wear respiratory protection.
  If on skin: Wash with plenty of water.
  IF INHALED: Remove person to fresh air and keep comfortable for breathing.
  If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  If exposed or concerned: Get medical advice/attention.
  Specific treatment (see on this label).
  Get medical advice/attention if you feel unwell.
  Take off contaminated clothing and wash it before reuse.
  If skin irritation or rash occurs: Get medical advice/attention.
  If eye irritation persists: Get medical advice/attention.
  If experiencing respiratory symptoms: Call a poison center/doctor.
  Wash contaminated clothing before reuse.
  Store in a well-ventilated place. Keep container tightly closed.
  Store locked up.
  Dispose of contents/container in accordance with local/regional/national/international regulations.
50.1.3

Classification system:
- NFPA ratings (scale 0 - 4)
  - Health = 2
  - Fire = 0
  - Reactivity = 0

HMIS-ratings (scale 0 - 4)
- Health = *2
- Fire = 0
- Reactivity = 0

Other hazards
- Results of PBT and vPvB assessment
  - PBT: Not applicable.
  - vPvB: Not applicable.

3 Composition/information on ingredients

- Chemical characterization: Mixtures
- Description: Mixture of the substances listed below with nonhazardous additions.

Dangerous components:
- 7778-50-9 potassium dichromate 1.0%

Chemical identification of the substance/preparation
- 7732-18-5 water, distilled, conductivity or of similar purity 99.0%

4 First-aid measures

- Description of first aid measures
- General information:
  - Immediately remove any clothing soiled by the product.
  - Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
  - Remove breathing apparatus only after contaminated clothing have been completely removed.
  - In case of irregular breathing or respiratory arrest provide artificial respiration.
- After inhalation:
  - Supply fresh air or oxygen; call for doctor.
  - In case of unconsciousness place patient stably in side position for transportation.
- After skin contact:
  - Immediately wash with water and soap and rinse thoroughly.
- After eye contact:
  - Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
- After swallowing:
  - If symptoms persist consult doctor.
- Information for doctor:
  - Most important symptoms and effects, both acute and delayed: No further relevant information available.
5 Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:** Use fire fighting measures that suit the environment.
- **Special hazards arising from the substance or mixture**
  - During heating or in case of fire poisonous gases are produced.
- **Advice for firefighters**
  - **Protective equipment:** Mouth respiratory protective device.

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures** Mount respiratory protective device.
- **Environmental precautions:**
  - Dilute with plenty of water.
  - Do not allow to enter sewers/surface or ground water.
- **Methods and material for containment and cleaning up:**
  - Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
  - Dispose contaminated material as waste according to item 13.
  - Ensure adequate ventilation.
- **Reference to other sections**
  - See Section 7 for information on safe handling.
  - See Section 8 for information on personal protection equipment.
  - See Section 13 for disposal information.
- **Protective Action Criteria for Chemicals**

  | PAC-1: | 7778-50-9 potassium dichromate | 0.42 mg/m³ |
  | PAC-2: | 7778-50-9 potassium dichromate | 7.4 mg/m³ |
  | PAC-3: | 7778-50-9 potassium dichromate | 44 mg/m³ |

7 Handling and storage

- **Handling:**
- **Precautions for safe handling**
  - Ensure good ventilation/exhaustion at the workplace.
  - Open and handle receptacle with care.
  - Prevent formation of aerosols.
- **Information about protection against explosions and fires:** Keep respiratory protective device available.
Trade name: Chromium+6 10000 μg/mL in H2O

- Conditions for safe storage, including any incompatibilities
  - Storage:
    - Requirements to be met by storerooms and receptacles: No special requirements.
    - Information about storage in one common storage facility: Not required.
    - Further information about storage conditions: Keep receptacle tightly sealed.
- Specific end use(s) No further relevant information available.

8 Exposure controls/personal protection

- Additional information about design of technical systems: No further data; see item 7.
- Control parameters
  - Components with limit values that require monitoring at the workplace:

<table>
<thead>
<tr>
<th>Component</th>
<th>PEL</th>
<th>REL</th>
<th>TLV</th>
</tr>
</thead>
<tbody>
<tr>
<td>7778-50-9 potassium dichromate</td>
<td>Long-term value: 0.005* mg/m³</td>
<td>Long-term value: 0.0002 mg/m³</td>
<td>Short-term value: 0.0005 mg/m³</td>
</tr>
<tr>
<td>Ceiling limit value: 0.1** mg/m³</td>
<td>as Cr(VI)</td>
<td>as Cr; See Pocket Guide Apps. A and C</td>
<td></td>
</tr>
<tr>
<td>*as Cr(VI) **as CrO3; see 29 CFR 1910.1026</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Ingredients with biological limit values:

<table>
<thead>
<tr>
<th>Component</th>
<th>BEI</th>
</tr>
</thead>
<tbody>
<tr>
<td>7778-50-9 potassium dichromate</td>
<td>25 μg/L</td>
</tr>
<tr>
<td>Medium: urine</td>
<td></td>
</tr>
<tr>
<td>Time: end of shift at end of workweek</td>
<td></td>
</tr>
<tr>
<td>Parameter: Total chromium (fume)</td>
<td></td>
</tr>
<tr>
<td>10 μg/L</td>
<td></td>
</tr>
<tr>
<td>Medium: urine</td>
<td></td>
</tr>
<tr>
<td>Time: increase during shift</td>
<td></td>
</tr>
<tr>
<td>Parameter: Total chromium (fume)</td>
<td></td>
</tr>
</tbody>
</table>

- Additional information: The lists that were valid during the creation were used as basis.
- Exposure controls
- Personal protective equipment:
  - General protective and hygienic measures:
    - Keep away from foodstuffs, beverages and feed.
    - Immediately remove all soiled and contaminated clothing.
    - Wash hands before breaks and at the end of work.
    - Store protective clothing separately.
    - Avoid contact with the eyes and skin.
· **Breathing equipment:**
  In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

· **Protection of hands:**

  ![Protective gloves]

  The glove material has to be impermeable and resistant to the product/ the substance/ the preparation. Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

  Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· **Material of gloves**

  The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

· **Penetration time of glove material**

  The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

· **Eye protection:**

  ![Tightly sealed goggles]

9 **Physical and chemical properties**

· **Information on basic physical and chemical properties**

  · **General Information**

    · **Appearance:**

      | Form: | Liquid |
      |------|-------|
      | Color: | colorless |

    · **Odor:**

      Characteristic

    · **Odor threshold:**

      Not determined.

    · **pH-value:**

      Not determined.

    · **Change in condition**

      | Melting point/Melting range: | Undetermined. |
      | Boiling point/Boiling range: | 100 °C (212 °F) |

    · **Flash point:**

      Not applicable.

    · **Flammability (solid, gaseous):**

      Not applicable.

    · **Decomposition temperature:**

      Not determined.
50.1.3

· Auto igniting: Product is not selfigniting.

· Danger of explosion: Product does not present an explosion hazard.

· Explosion limits:
  Lower: Not determined.
  Upper: Not determined.

· Vapor pressure at 20 °C (68 °F): 23 hPa (17.3 mm Hg)

· Density at 20 °C (68 °F): 1.01676 g/cm³ (8.48486 lbs/gal)

· Bulk density: 1.017 kg/m³
· Relative density Not determined.
· Vapor density Not determined.
· Evaporation rate Not determined.

· Solubility in / Miscibility with Water: Fully miscible.

· Partition coefficient (n-octanol/water): Not determined.

· Viscosity:
  Dynamic: Not determined.
  Kinematic: Not determined.

· Solvent content:
  Water: 99.0 %
  VOC content: 0.00 %
  0.0 g/l / 0.00 lb/gal

· Solids content: 1.0 %
· Other information No further relevant information available.

10 Stability and reactivity

· Reactivity No further relevant information available.
· Chemical stability
· Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
· Possibility of hazardous reactions No dangerous reactions known.
· Conditions to avoid No further relevant information available.
· Incompatible materials: No further relevant information available.
· Hazardous decomposition products: No dangerous decomposition products known.
11 Toxicological information

- Information on toxicological effects
- Acute toxicity:

- LD/LC50 values that are relevant for classification:

<table>
<thead>
<tr>
<th>CAS Number</th>
<th>Substance</th>
<th>Route</th>
<th>LD50/LC50 Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>7778-50-9</td>
<td>potassium dichromate</td>
<td>Oral</td>
<td>190 mg/kg (mouse)</td>
</tr>
</tbody>
</table>

- Primary irritant effect:
  - on the skin: Irritant to skin and mucous membranes.
  - on the eye: Irritating effect.
- Sensitization:
  Sensitization possible through inhalation.
  Sensitization possible through skin contact.
- Additional toxicological information:
  The product shows the following dangers according to internally approved calculation methods for preparations:
  Toxic
  Harmful
  Irritant
  The product can cause inheritable damage.

- Carcinogenic categories

<table>
<thead>
<tr>
<th>Agency</th>
<th>CAS Number</th>
<th>Substance</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>IARC (International Agency for Research on Cancer)</td>
<td>7778-50-9</td>
<td>potassium dichromate</td>
<td>1</td>
</tr>
<tr>
<td>NTP (National Toxicology Program)</td>
<td>7778-50-9</td>
<td>potassium dichromate</td>
<td>K</td>
</tr>
<tr>
<td>OSHA-Ca (Occupational Safety &amp; Health Administration)</td>
<td>None of the ingredients is listed.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

12 Ecological information

- Toxicity
- Aquatic toxicity: No further relevant information available.
- Persistence and degradability: No further relevant information available.
- Behavior in environmental systems:
  - Bioaccumulative potential: No further relevant information available.
- Mobility in soil: No further relevant information available.
- Additional ecological information:
  - General notes:
    Water hazard class 3 (Self-assessment): extremely hazardous for water
    Do not allow product to reach ground water, water course or sewage system, even in small quantities.
    Danger to drinking water if even extremely small quantities leak into the ground.
  - Results of PBT and vPvB assessment
    - PBT: Not applicable.
    - vPvB: Not applicable.
13 Disposal considerations

· Waste treatment methods
  · Recommendation: Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

· Uncleaned packagings:
  · Recommendation: Disposal must be made according to official regulations.
  · Recommended cleansing agent: Water, if necessary with cleansing agents.

14 Transport information

· UN-Number
  · DOT, ADR, IMDG, IATA UN1935

· UN proper shipping name
  · DOT Cyanide solutions, n.o.s. (potassium dichromate)
  · ADR 1935 CYANIDE SOLUTION, N.O.S. (potassium dichromate)
  · IMDG CYANIDE SOLUTION, N.O.S. (potassium dichromate)
  · IATA CYANIDE SOLUTION, N.O.S.

· Transport hazard class(es)
  · DOT
    · Class 6.1 Toxic substances
    · Label 6.1
  · ADR
    · Class 6.1 (T4) Toxic substances
    · Label 6.1
Safety Data Sheet  
acc. to OSHA HCS

Trade name: Chromium+6 10000 μg/mL in H2O

<table>
<thead>
<tr>
<th>IMDG, IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>· Class</td>
</tr>
<tr>
<td>· Label</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Packing group</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOT, ADR, IMDG, IATA</td>
</tr>
<tr>
<td>Class</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental hazards:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not applicable.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Special precautions for user</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warning: Toxic substances</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EMS Number:</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-A,S-A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Segregation groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyanides</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stowage Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stowage Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>SW2 Clear of living quarters.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Segregation Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>SG35 Stow &quot;separated from&quot; SGG1-acids</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not applicable.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Transport/Additional information:</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOT</td>
</tr>
<tr>
<td>· Quantity limitations</td>
</tr>
<tr>
<td>On passenger aircraft/rail: 60 L</td>
</tr>
<tr>
<td>On cargo aircraft only: 220 L</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ADR</th>
</tr>
</thead>
<tbody>
<tr>
<td>· Excepted quantities (EQ)</td>
</tr>
<tr>
<td>Code: E1</td>
</tr>
<tr>
<td>Maximum net quantity per inner packaging: 30 ml</td>
</tr>
<tr>
<td>Maximum net quantity per outer packaging: 1000 ml</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IMDG</th>
</tr>
</thead>
<tbody>
<tr>
<td>· Limited quantities (LQ)</td>
</tr>
<tr>
<td>5L</td>
</tr>
<tr>
<td>· Excepted quantities (EQ)</td>
</tr>
<tr>
<td>Code: E1</td>
</tr>
<tr>
<td>Maximum net quantity per inner packaging: 30 ml</td>
</tr>
<tr>
<td>Maximum net quantity per outer packaging: 1000 ml</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>UN &quot;Model Regulation&quot;:</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN 1935 CYANIDE SOLUTION, N.O.S. (POTASSIUM DICHROMATE), 6.1, III</td>
</tr>
</tbody>
</table>

(Contd. of page 9)
### 15 Regulatory information

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **Sara**
- **Section 355 (extremely hazardous substances):**
  None of the ingredients is listed.
- **Section 313 (Specific toxic chemical listings):**
  7778-50-9 potassium dichromate
- **TSCA (Toxic Substances Control Act):**
  All components have the value ACTIVE.
- **Hazardous Air Pollutants**
  7778-50-9 potassium dichromate
- **Proposition 65**
  - **Chemicals known to cause cancer:**
    7778-50-9 potassium dichromate
  - **Chemicals known to cause reproductive toxicity for females:**
    7778-50-9 potassium dichromate
  - **Chemicals known to cause reproductive toxicity for males:**
    7778-50-9 potassium dichromate
  - **Chemicals known to cause developmental toxicity:**
    7778-50-9 potassium dichromate
- **Carcinogenic categories**
  - **EPA (Environmental Protection Agency)**
    7778-50-9 potassium dichromate A(inh), D(oral), K/L(inh), CBD(oral)
  - **TLV (Threshold Limit Value established by ACGIH)**
    7778-50-9 potassium dichromate A1
  - **NIOSH-Ca (National Institute for Occupational Safety and Health)**
    7778-50-9 potassium dichromate
- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms**
  - GHS06
  - GHS08
- **Signal word** Danger
- **Hazard-determining components of labeling:**
  potassium dichromate

(Contd. on page 12)
Hazard statements
H331 Toxic if inhaled.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317 May cause an allergic skin reaction.
H340 May cause genetic defects.
H350 May cause cancer.
H360 May damage fertility or the unborn child.
H372 Causes damage to organs through prolonged or repeated exposure.

Precautionary statements
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Do not breathe dust/fume/gas/mist/vapors/spray.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing must not be allowed out of the workplace.
Wear protective gloves/protective clothing/eye protection/face protection.
[In case of inadequate ventilation] wear respiratory protection.
If on skin: Wash with plenty of water.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Get medical advice/attention.
Specific treatment (see on this label).
Get medical advice/attention if you feel unwell.
Take off contaminated clothing and wash it before reuse.
If skin irritation or rash occurs: Get medical advice/attention.
If eye irritation persists: Get medical advice/attention.
If experiencing respiratory symptoms: Call a poison center/doctor.
Wash contaminated clothing before reuse.
Store in a well-ventilated place. Keep container tightly closed.
Store locked up.
Dispose of contents/container in accordance with local/regional/national/international regulations.

National regulations:

Information about limitation of use:
Workers are not allowed to be exposed to the hazardous carcinogenic materials contained in this preparation.
Exceptions can be made by the authorities in certain cases.

Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information
This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.
Trade name: Chromium+6 10000 μg/mL in H2O

- **Department issuing SDS:** Environment protection department.
- **Contact:**
  - High-Purity Standards
  - Tel: 843-767-7900
  - Fax: 843-767-7906
- **Date of preparation / last revision:** 03/06/2020 / -
- **Abbreviations and acronyms:**
  - ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
  - IMDG: International Maritime Code for Dangerous Goods
  - DOT: US Department of Transportation
  - IATA: International Air Transport Association
  - ACGIH: American Conference of Governmental Industrial Hygienists
  - EINECS: European Inventory of Existing Commercial Chemical Substances
  - ELINCS: European List of Notified Chemical Substances
  - CAS: Chemical Abstracts Service (division of the American Chemical Society)
  - NFPA: National Fire Protection Association (USA)
  - HMIS: Hazardous Materials Identification System (USA)
  - VOC: Volatile Organic Compounds (USA, EU)
  - LC50: Lethal concentration, 50 percent
  - LD50: Lethal dose, 50 percent
  - PBT: Persistent, Bioaccumulative and Toxic
  - vPvB: very Persistent and very Bioaccumulative
  - NIOSH: National Institute for Occupational Safety
  - OSHA: Occupational Safety & Health
  - TLV: Threshold Limit Value
  - REL: Recommended Exposure Limit
  - BEI: Biological Exposure Limit
  - Acute Tox. 3: Acute toxicity – Category 3
  - Skin Irrit. 2: Skin corrosion/irritation – Category 2
  - Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A
  - Resp. Sens. 1: Respiratory sensitisation – Category 1
  - Skin Sens. 1: Skin sensitisation – Category 1
  - Muta. 1B: Germ cell mutagenicity – Category 1B
  - Carc. 1B: Carcinogenicity – Category 1B
  - Repr. 1B: Reproductive toxicity – Category 1B
  - STOT RE 1: Specific target organ toxicity (repeated exposure) – Category 1