### Section 1. Identification

**GHS product identifier**: CRC-105 products

**Other means of identification**: CRC-105 (012005), CRC-105-2 (012041), CRC-105-8 (012055)

**Product type**: Powder.

**Relevant identified uses of the substance or mixture and uses advised against**

Not applicable.

**Supplier's details**: Praxair Surface Technologies, Inc.

1555 Main Street

Indianapolis, IN 46224

USA

317-240-2650

**Emergency telephone number (with hours of operation)**: 317-240-2484 7:00am - 3:30pm ET Mon-Fri

Chemtrec: 1-800-424-9300

### Section 2. Hazards identification

**OSHA/HCS status**: While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this MSDS contains valuable information critical to the safe handling and proper use of the product. This MSDS should be retained and available for employees and other users of this product.

**Classification of the substance or mixture**: Not classified.

**GHS label elements**

- **Signal word**: No signal word.

- **Hazard statements**: No known significant effects or critical hazards.

- **Precautionary statements**
  - **Prevention**: Not applicable.
  - **Response**: Not applicable.
  - **Storage**: Not applicable.
  - **Disposal**: Not applicable.

- **Hazards not otherwise classified**: Handling and/or processing of this material may generate a dust which can cause mechanical irritation of the eyes, skin, nose and throat.

### Section 3. Composition/information on ingredients

**Substance/mixture**: Substance

**Other means of identification**: CRC-105 (012005), CRC-105-2 (012041), CRC-105-8 (012055)

**CAS number/other identifiers**

- **CAS number**: Not available.

- **Product code**: CRC-105 products

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>%</th>
<th>CAS number</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRC-105 products</td>
<td>100</td>
<td>-</td>
</tr>
<tr>
<td>chromium</td>
<td>&gt;75</td>
<td>7440-47-3</td>
</tr>
<tr>
<td>carbon</td>
<td>5 - 20</td>
<td>7440-44-0</td>
</tr>
</tbody>
</table>
Section 3. Composition/information on ingredients

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

**Description of necessary first aid measures**

<table>
<thead>
<tr>
<th>Eye contact</th>
<th>Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation</td>
<td>Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.</td>
</tr>
<tr>
<td>Skin contact</td>
<td>Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.</td>
</tr>
<tr>
<td>Ingestion</td>
<td>Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.</td>
</tr>
</tbody>
</table>

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

**Potential acute health effects**

<table>
<thead>
<tr>
<th>Eye contact</th>
<th>Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the eyes.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation</td>
<td>Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs.</td>
</tr>
<tr>
<td>Skin contact</td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td>Ingestion</td>
<td>No known significant effects or critical hazards.</td>
</tr>
</tbody>
</table>

**Over-exposure signs/symptoms**

<table>
<thead>
<tr>
<th>Eye contact</th>
<th>Adverse symptoms may include the following: irritation, redness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation</td>
<td>Adverse symptoms may include the following: respiratory tract irritation, coughing</td>
</tr>
<tr>
<td>Skin contact</td>
<td>No specific data.</td>
</tr>
<tr>
<td>Ingestion</td>
<td>No specific data.</td>
</tr>
</tbody>
</table>

**Indication of immediate medical attention and special treatment needed, if necessary**

<table>
<thead>
<tr>
<th>Notes to physician</th>
<th>Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific treatments</td>
<td>No specific treatment.</td>
</tr>
<tr>
<td>Protection of first-aiders</td>
<td>No action shall be taken involving any personal risk or without suitable training.</td>
</tr>
</tbody>
</table>

See toxicological information (Section 11)

Section 5. Fire-fighting measures

**Extinguishing media**

<table>
<thead>
<tr>
<th>Suitable extinguishing media</th>
<th>Use an extinguishing agent suitable for the surrounding fire.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsuitable extinguishing media</td>
<td>None known.</td>
</tr>
</tbody>
</table>
Section 5. Fire-fighting measures

Specific hazards arising from the chemical:

Hazardous thermal decomposition products: No specific fire or explosion hazard.

Decomposition products may include the following materials:
- Carbon dioxide
- Carbon monoxide
- Metal oxide/oxides

Special protective actions for fire-fighters: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures:

For non-emergency personnel: No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing dust. Put on appropriate personal protective equipment.

For emergency responders: If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up:

Small spill: Move containers from spill area. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.

Large spill: Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labeled waste container. Avoid creating dusty conditions and prevent wind dispersal. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling:

Protective measures: Put on appropriate personal protective equipment (see Section 8). Avoid breathing dust.

Advice on general occupational hygiene: Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities: Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Storage: Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.
Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>Exposure limits</th>
</tr>
</thead>
</table>
| chromium        | ACGIH TLV (United States, 6/2013).  
TWA: 0.5 mg/m³, (measured as Cr) 8 hours.  
TWA: 1 mg/m³ 8 hours.  
NIOSH REL (United States, 10/2013).  
TWA: 0.5 mg/m³ 8 hours.  
OSHA PEL (United States, 2/2013).  
TWA: 1 mg/m³, (as Cr) 8 hours. |

Appropriate engineering controls

Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Environmental exposure controls

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection

Safety eyewear complying with an approved standard should be used to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields. If operating conditions cause high dust concentrations to be produced, use dust goggles.

Skin protection

Hand protection

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products.

Body protection

Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection

Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection

Use a properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Solid. [Powder.]
Color : Gray.
Odor : Odorless
Odor threshold : Not available.
pH : Not available.
Melting point : 1900°C (3452°F)
Boiling point : Not available.
Section 9. Physical and chemical properties

- **Flash point**: Not available.
- **Evaporation rate**: Not available.
- **Flammability (solid, gas)**: Not available.
- **Lower and upper explosive (flammable) limits**: Not available.
- **VOC content**: 0 lbs/gal (0 g/l)
- **Vapor pressure**: Not available.
- **Vapor density**: Not available.
- **Relative density**: Not available.
- **Solubility**: Insoluble in the following materials: cold water and hot water.
- **Partition coefficient: n-octanol/water**: Not available.
- **Auto-ignition temperature**: Not available.
- **Decomposition temperature**: Not available.
- **Viscosity**: Not available.

Section 10. Stability and reactivity

- **Reactivity**: No specific test data related to reactivity available for this product or its ingredients.
- **Chemical stability**: The product is stable.
- **Possibility of hazardous reactions**: Under normal conditions of storage and use, hazardous reactions will not occur.
- **Conditions to avoid**: No specific data.
- **Incompatible materials**: No specific data.
- **Hazardous decomposition products**: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

**Information on toxicological effects**

- **Acute toxicity**: Not available.
- **Irritation/Corrosion**: Not available.
- **Sensitization**: Not available.
- **Mutagenicity**: Not available.
- **Carcinogenicity**: Not available.

**Classification**

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>OSHA</th>
<th>IARC</th>
<th>NTP</th>
</tr>
</thead>
<tbody>
<tr>
<td>chromium</td>
<td>-</td>
<td>3</td>
<td>-</td>
</tr>
</tbody>
</table>

**Reproductive toxicity**: Not available.
Section 11. Toxicological information

**Teratogenicity**
Not available.

**Specific target organ toxicity (single exposure)**
Not available.

**Specific target organ toxicity (repeated exposure)**
Not available.

**Aspiration hazard**
Not available.

Information on the likely routes of exposure

**Inhalation**
Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs.

**Ingestion**
Skin contact: No known significant effects or critical hazards.

**Eye contact**
Adverse symptoms may include the following: irritation, redness.

**Inhalation**
Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the eyes.

**Skin contact**
No known significant effects or critical hazards.

**Ingestion**
No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

**Eye contact**
Adverse symptoms may include the following: irritation, redness.

**Inhalation**
Adverse symptoms may include the following: respiratory tract irritation, coughing.

**Skin contact**
No specific data.

**Ingestion**
No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

**Short term exposure**
Potential immediate effects: Not available.

Potential delayed effects: Not available.

**Long term exposure**
Potential immediate effects: Not available.

Potential delayed effects: Not available.

**Potential chronic health effects**
Not available.

- **General**
  Repeated or prolonged inhalation of dust may lead to chronic respiratory irritation.

- **Carcinogenicity**
  No known significant effects or critical hazards.

- **Mutagenicity**
  No known significant effects or critical hazards.

- **Teratogenicity**
  No known significant effects or critical hazards.

- **Developmental effects**
  No known significant effects or critical hazards.

- **Fertility effects**
  No known significant effects or critical hazards.

Numerical measures of toxicity

**Acute toxicity estimates**
Not available.
Section 12. Ecological information

**Toxicity**

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>chromium</td>
<td>Acute EC50 0.2 ppm Marine water</td>
<td>Algae - Bacillariophyta</td>
<td>72 hours</td>
</tr>
<tr>
<td></td>
<td>Acute EC50 5 ppm Marine water</td>
<td>Algae - Macrocytis pyriforma - Young</td>
<td>4 days</td>
</tr>
<tr>
<td></td>
<td>Acute EC50 35000 µg/l Fresh water</td>
<td>Aquatic plants - Lemna minor</td>
<td>4 days</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 45 µg/l Fresh water</td>
<td>Crustaceans - Ceriodaphnia reticulata</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 22 µg/l Fresh water</td>
<td>Daphnia - Daphnia magna</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 13.9 ppm Fresh water</td>
<td>Fish - Anguilla rostrata</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Chronic NOEC 50 mg/l Marine water</td>
<td>Algae - Glenodinium halli</td>
<td>72 hours</td>
</tr>
<tr>
<td></td>
<td>Chronic NOEC 0.19 µg/l Fresh water</td>
<td>Fish - Cyprinus carpio</td>
<td>4 weeks</td>
</tr>
</tbody>
</table>

**Persistence and degradability**

Not available.

**Bioaccumulative potential**

Not available.

**Mobility in soil**

| Soil/water partition coefficient (K<sub>OC</sub>) | : Not available. |

**Other adverse effects**

: No known significant effects or critical hazards.

Section 13. Disposal considerations

**Disposal methods**

: The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

<table>
<thead>
<tr>
<th>UN number</th>
<th>DOT Classification</th>
<th>TDG Classification</th>
<th>Mexico Classification</th>
<th>ADR/RID</th>
<th>IMDG</th>
<th>IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN proper shipping name</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Transport hazard class(es)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Section 14. Transport information

| Packing group | - | - | - | - | - | - | - |
| Additional information | Reportable quantity<br>6600.7 lbs / 2996.7 kg<br>Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ (reportable quantity) transportation requirements. | - | - | - | - | - | - |

Special precautions for user: Transport within user’s premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

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

Section 15. Regulatory information

| U.S. Federal regulations | TSCA 8(a) CDR Exempt/Partial exemption: Not determined<br>United States inventory (TSCA 8b): All components are listed or exempted.<br>Clean Water Act (CWA) 307: chromium | Listed<br>Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs): Not listed<br>Clean Air Act Section 602 Class I Substances: Not listed<br>Clean Air Act Section 602 Class II Substances: Not listed<br>DEA List I Chemicals (Precursor Chemicals): Not listed<br>DEA List II Chemicals (Essential Chemicals): Not listed<br>SARA 302/304 Composition/information on ingredients: No products were found.<br>SARA 304 RQ: Not applicable.<br>SARA 311/312 Classification: Not applicable.<br>Composition/information on ingredients: No products were found. |
Section 15. Regulatory information

<table>
<thead>
<tr>
<th>SARA 313</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Form R - Reporting requirements</strong></td>
<td>Product name</td>
<td>CAS number</td>
</tr>
<tr>
<td></td>
<td>chromium</td>
<td>7440-47-3</td>
</tr>
<tr>
<td><strong>Supplier notification</strong></td>
<td>chromium</td>
<td>7440-47-3</td>
</tr>
</tbody>
</table>

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

- **Massachusetts**: The following components are listed: CHROMIUM
- **New York**: The following components are listed: Chromium
- **New Jersey**: The following components are listed: CHROMIUM
- **Pennsylvania**: The following components are listed: CHROMIUM

Canada inventory

- **International regulations**
  - **International lists**
    - **Australia inventory (AICS)**: All components are listed or exempted.
    - **China inventory (IECSC)**: All components are listed or exempted.
    - **Japan inventory**: Not determined.
    - **Korea inventory**: All components are listed or exempted.
    - **Malaysia Inventory (EHS Register)**: Not determined.
    - **New Zealand Inventory of Chemicals (NZIoC)**: All components are listed or exempted.
    - **Philippines inventory (PICCS)**: All components are listed or exempted.
    - **Taiwan inventory (CSNN)**: Not determined.

  - **Chemical Weapons Convention List Schedule I Chemicals**: Not listed
  - **Chemical Weapons Convention List Schedule II Chemicals**: Not listed
  - **Chemical Weapons Convention List Schedule III Chemicals**: Not listed

Section 16. Other information

**History**

- **Date of printing**: 7/21/2014.
- **Date of issue/Date of revision**: 7/21/2014.

**Key to abbreviations**

- ATE = Acute Toxicity Estimate
- BCF = Bioconcentration Factor
- GHS = Globally Harmonized System of Classification and Labelling of Chemicals
- IATA = International Air Transport Association
- IBC = Intermediate Bulk Container
- IMDG = International Maritime Dangerous Goods
- LogPow = logarithm of the octanol/water partition coefficient
- UN = United Nations

**References**

- Not available.

**Notice to reader**
Section 16. Other information

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.