1 Identification

· Product identifier

· Trade name: QCS-23

· Article number: QCS-23

· 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

  GHS08 Health hazard

  Resp. Sens. 1  H334  May cause allergy or asthma symptoms or breathing difficulties if inhaled.
  Carc. 1B  H350  May cause cancer.
  Repr. 1A  H360  May damage fertility or the unborn child.

  GHS05 Corrosion

  Met. Corr. 1  H290  May be corrosive to metals.
  Skin Corr. 1A  H314  Causes severe skin burns and eye damage.
  Eye Dam. 1  H318  Causes serious eye damage.

  GHS07

  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).
Hazard pictograms

- GHS05
- GHS08

Signal word Danger

Hazard-determining components of labeling:
- nitric acid
- cadmium
- lead
- cobalt
- nickel

Hazard statements
- H290 May be corrosive to metals.
- H314 Causes severe skin burns and eye damage.
- H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
- H317 May cause an allergic skin reaction.
- H350 May cause cancer.
- H360 May damage fertility or the unborn child.

Precautionary statements

Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Keep only in original container.
Do not breathe dusts or mists.
Wash thoroughly after handling.
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 swallowed: Rinse mouth. Do NOT induce vomiting.
If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
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.
Immediately call a poison center/doctor.
IF exposed or concerned: Get medical advice/attention.
Specific treatment (see on this label).
If skin irritation or rash occurs: Get medical advice/attention.
If experiencing respiratory symptoms: Call a poison center/doctor.
Wash contaminated clothing before reuse.
Absorb spillage to prevent material damage.
Store locked up.
Store in corrosive resistant container with a resistant inner liner.
Dispose of contents/container in accordance with local/regional/national/international regulations.
Trade name: QCS-23

- Classification system:
  - NFPA ratings (scale 0 - 4)
    - Health = 3
    - Fire = 0
    - Reactivity = 0

- HMIS-ratings (scale 0 - 4)
  - Health = *3
  - 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:
  - 7697-37-2 nitric acid 5.0%
  - 7439-92-1 lead 0.1%
  - 7440-02-0 nickel 0.1%
  - 7440-28-0 thallium 0.1%
  - 7440-43-9 cadmium 0.1%
  - 7440-48-4 cobalt 0.1%
  - 10043-35-3 boric acid 0.1%

- Chemical identification of the substance/preparation
  - 7732-18-5 water, distilled, conductivity or of similar purity 92.7%
  - 497-19-8 sodium carbonate 0.1%
  - 7429-90-5 aluminium 0.1%
  - 7439-89-6 iron 0.1%
  - 7439-93-2 lithium 0.1%
  - 7439-95-4 magnesium 0.1%
  - 7439-96-5 manganese 0.1%
  - 7440-09-7 potassium 0.1%
  - 7440-22-4 silver 0.1%
  - 7440-24-6 strontium 0.1%
  - 7440-39-3 barium 0.1%
Trade name: QCS-23

(Contd. of page 3)

<table>
<thead>
<tr>
<th>CAS No.</th>
<th>Substance</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>7440-47-3</td>
<td>chromium</td>
<td>0.1%</td>
</tr>
<tr>
<td>7440-50-8</td>
<td>copper</td>
<td>0.1%</td>
</tr>
<tr>
<td>7440-55-3</td>
<td>gallium</td>
<td>0.1%</td>
</tr>
<tr>
<td>7440-66-6</td>
<td>zinc</td>
<td>0.1%</td>
</tr>
<tr>
<td>7440-69-9</td>
<td>bismuth</td>
<td>0.1%</td>
</tr>
<tr>
<td>7440-70-2</td>
<td>calcium</td>
<td>0.1%</td>
</tr>
<tr>
<td>7440-74-6</td>
<td>indium</td>
<td>0.1%</td>
</tr>
</tbody>
</table>

4 First-aid measures

· Description of first aid measures
  · General information: Immediately remove any clothing soiled by the product.
  · After inhalation:
    Supply fresh air and to be sure call for a 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. Then consult a doctor.
  · After swallowing: Drink copious amounts of water and provide fresh air. Immediately call a doctor.

· Information for doctor:
  · Most important symptoms and effects, both acute and delayed No further relevant information available.
  · Indication of any immediate medical attention and special treatment needed
    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.
  Wear protective equipment. Keep unprotected persons away.

· 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).

(Contd. on page 5)
Use neutralizing agent.
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**:
    - 7697-37-2 nitric acid 0.16 ppm
    - 497-19-8 sodium carbonate 7.6 mg/m³
    - 7439-89-6 iron 3.2 mg/m³
    - 7439-92-1 lead 0.15 mg/m³
    - 7439-93-2 lithium 3.3 mg/m³
    - 7439-95-4 magnesium 18 mg/m³
    - 7439-96-5 manganese 3 mg/m³
    - 7440-02-0 nickel 4.5 mg/m³
    - 7440-09-7 potassium 2.3 mg/m³
    - 7440-22-4 silver 0.3 mg/m³
    - 7440-24-6 strontium 30 mg/m³
    - 7440-28-0 thallium 0.06 mg/m³
    - 7440-39-3 barium 1.5 mg/m³
    - 7440-43-9 cadmium 0.10 mg/m³
    - 7440-47-3 chromium 1.5 mg/m³
    - 7440-48-4 cobalt 0.18 mg/m³
    - 7440-50-8 copper 3 mg/m³
    - 7440-55-3 gallium 30 mg/m³
    - 7440-66-6 zinc 6 mg/m³
    - 7440-69-9 bismuth 15 mg/m³
    - 7440-74-6 indium 0.3 mg/m³
    - 10043-35-3 boric acid 6 mg/m³

  - **PAC-2**:
    - 7697-37-2 nitric acid 24 ppm
    - 497-19-8 sodium carbonate 83 mg/m³
    - 7439-89-6 iron 35 mg/m³
    - 7439-92-1 lead 120 mg/m³
    - 7439-93-2 lithium 36 mg/m³
    - 7439-95-4 magnesium 200 mg/m³
    - 7439-96-5 manganese 5 mg/m³

(Contd. on page 6)
Trade name: QCS-23

<table>
<thead>
<tr>
<th>CAS Number</th>
<th>Substance</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>7440-02-0</td>
<td>nickel</td>
<td>50 mg/m³</td>
</tr>
<tr>
<td>7440-09-7</td>
<td>potassium</td>
<td>25 mg/m³</td>
</tr>
<tr>
<td>7440-22-4</td>
<td>silver</td>
<td>170 mg/m³</td>
</tr>
<tr>
<td>7440-24-6</td>
<td>strontium</td>
<td>330 mg/m³</td>
</tr>
<tr>
<td>7440-28-0</td>
<td>thallium</td>
<td>3.3 mg/m³</td>
</tr>
<tr>
<td>7440-39-3</td>
<td>barium</td>
<td>180 mg/m³</td>
</tr>
<tr>
<td>7440-43-9</td>
<td>cadmium</td>
<td>0.76 mg/m³</td>
</tr>
<tr>
<td>7440-47-3</td>
<td>chromium</td>
<td>17 mg/m³</td>
</tr>
<tr>
<td>7440-48-4</td>
<td>cobalt</td>
<td>2 mg/m³</td>
</tr>
<tr>
<td>7440-50-8</td>
<td>copper</td>
<td>33 mg/m³</td>
</tr>
<tr>
<td>7440-55-3</td>
<td>gallium</td>
<td>330 mg/m³</td>
</tr>
<tr>
<td>7440-66-6</td>
<td>zinc</td>
<td>21 mg/m³</td>
</tr>
<tr>
<td>7440-69-9</td>
<td>bismuth</td>
<td>170 mg/m³</td>
</tr>
<tr>
<td>7440-74-6</td>
<td>indium</td>
<td>3.3 mg/m³</td>
</tr>
<tr>
<td>10043-35-3</td>
<td>boric acid</td>
<td>23 mg/m³</td>
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</tbody>
</table>

- PAC-3:

<table>
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<tr>
<th>CAS Number</th>
<th>Substance</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>7697-37-2</td>
<td>nitric acid</td>
<td>92 ppm</td>
</tr>
<tr>
<td>497-19-8</td>
<td>sodium carbonate</td>
<td>300 mg/m³</td>
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<tr>
<td>7439-89-6</td>
<td>iron</td>
<td>150 mg/m³</td>
</tr>
<tr>
<td>7439-92-1</td>
<td>lead</td>
<td>700 mg/m³</td>
</tr>
<tr>
<td>7439-93-2</td>
<td>lithium</td>
<td>220 mg/m³</td>
</tr>
<tr>
<td>7439-95-4</td>
<td>magnesium</td>
<td>1,200 mg/m³</td>
</tr>
<tr>
<td>7439-96-5</td>
<td>manganese</td>
<td>1,800 mg/m³</td>
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<tr>
<td>7440-02-0</td>
<td>nickel</td>
<td>99 mg/m³</td>
</tr>
<tr>
<td>7440-09-7</td>
<td>potassium</td>
<td>150 mg/m³</td>
</tr>
<tr>
<td>7440-22-4</td>
<td>silver</td>
<td>990 mg/m³</td>
</tr>
<tr>
<td>7440-24-6</td>
<td>strontium</td>
<td>2,000 mg/m³</td>
</tr>
<tr>
<td>7440-28-0</td>
<td>thallium</td>
<td>20 mg/m³</td>
</tr>
<tr>
<td>7440-39-3</td>
<td>barium</td>
<td>1,100 mg/m³</td>
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<tr>
<td>7440-43-9</td>
<td>cadmium</td>
<td>4.7 mg/m³</td>
</tr>
<tr>
<td>7440-47-3</td>
<td>chromium</td>
<td>99 mg/m³</td>
</tr>
<tr>
<td>7440-48-4</td>
<td>cobalt</td>
<td>20 mg/m³</td>
</tr>
<tr>
<td>7440-50-8</td>
<td>copper</td>
<td>200 mg/m³</td>
</tr>
<tr>
<td>7440-53-3</td>
<td>gallium</td>
<td>2,000 mg/m³</td>
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<tr>
<td>7440-66-6</td>
<td>zinc</td>
<td>120 mg/m³</td>
</tr>
<tr>
<td>7440-69-9</td>
<td>bismuth</td>
<td>990 mg/m³</td>
</tr>
<tr>
<td>7440-74-6</td>
<td>indium</td>
<td>20 mg/m³</td>
</tr>
</tbody>
</table>
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.

· 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>7697-37-2 nitric acid</td>
<td>Long-term value: 5 mg/m³, 2 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7440-02-0 nickel</td>
<td>Long-term value: 1 mg/m³</td>
<td>Long-term value: 0.015 mg/m³ as Ni; See Pocket Guide App. A</td>
<td>Long-term value: 1.5* mg/m³ elemental, *inhalable fraction</td>
</tr>
<tr>
<td>7440-43-9 cadmium</td>
<td>Long-term value: 0.005 mg/m³ as Cd; see 29 CFR 1910.1027</td>
<td></td>
<td>Long-term value: 0.01 0.002* mg/m³ as Cd; *respirable fraction; BEI</td>
</tr>
</tbody>
</table>

(Contd. of page 6)
Trade name: QCS-23

7440-48-4 cobalt

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Long-term value</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEL</td>
<td>0.1 mg/m³</td>
<td>Co, fume</td>
</tr>
<tr>
<td>REL</td>
<td>0.05 mg/m³</td>
<td>Co, dust &amp; fume</td>
</tr>
<tr>
<td>TLV</td>
<td>0.02 mg/m³</td>
<td>inh. fraction, DSEN, RSEN, BEI</td>
</tr>
</tbody>
</table>

10043-35-3 boric acid

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Short-term value</th>
<th>Long-term value</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>TLV</td>
<td>6 mg/m³</td>
<td>2 mg/m³</td>
<td>inh. fraction</td>
</tr>
</tbody>
</table>

- Ingredients with biological limit values:

7440-43-9 cadmium

<table>
<thead>
<tr>
<th>BEI</th>
<th>5 µg/g creatinine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium</td>
<td>urine</td>
</tr>
<tr>
<td>Time</td>
<td>not critical</td>
</tr>
<tr>
<td>Parameter</td>
<td>Cadmium (background)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Long-term value</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 µg/L</td>
<td>blood</td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>not critical</td>
<td></td>
</tr>
<tr>
<td>Parameter</td>
<td>Cadmium (background)</td>
<td></td>
</tr>
</tbody>
</table>

7440-48-4 cobalt

<table>
<thead>
<tr>
<th>BEI</th>
<th>15 µg/L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium</td>
<td>urine</td>
</tr>
<tr>
<td>Time</td>
<td>end of shift at end of workweek</td>
</tr>
<tr>
<td>Parameter</td>
<td>Cobalt (background)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Long-term value</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 µg/L</td>
<td>blood</td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>end of shift at end of workweek</td>
<td></td>
</tr>
<tr>
<td>Parameter</td>
<td>Cobalt (background, semi-quantitative)</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.
  Avoid contact with the eyes and skin.
Trade name: QCS-23

· **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:** 83 °C (181.4 °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): 1.137 g/cm³ (9.48827 lbs/gal)
· Bulk density: 1,105 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: 92.7 %
  VOC content: 0.00 %
  0.0 g/l / 0.00 lb/gal
· Solids content: 2.3 %
· 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:**

<table>
<thead>
<tr>
<th>Compound</th>
<th>Oral LD50</th>
</tr>
</thead>
<tbody>
<tr>
<td>7440-43-9 cadmium</td>
<td>225 mg/kg (rat)</td>
</tr>
<tr>
<td>7440-48-4 cobalt</td>
<td>6,170 mg/kg (rat)</td>
</tr>
<tr>
<td>10043-35-3 boric acid</td>
<td>2,660 mg/kg (rat)</td>
</tr>
</tbody>
</table>

**· Primary irritant effect:**

**· on the skin:** Strong caustic effect on skin and mucous membranes.

**· on the eye:**

- Strong caustic effect.
- Strong irritant with the danger of severe eye injury.

**· 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:

- Harmful
- Corrosive
- Irritant

Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

**· Carcinogenic categories**

**· IARC (International Agency for Research on Cancer)**

<table>
<thead>
<tr>
<th>Compound</th>
<th>Carcinogenicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>7439-92-1 lead</td>
<td>2B</td>
</tr>
<tr>
<td>7440-02-0 nickel</td>
<td>2B</td>
</tr>
<tr>
<td>7440-43-9 cadmium</td>
<td>1</td>
</tr>
<tr>
<td>7440-47-3 chromium</td>
<td>3</td>
</tr>
<tr>
<td>7440-48-4 cobalt</td>
<td>2B</td>
</tr>
</tbody>
</table>

**· NTP (National Toxicology Program)**

<table>
<thead>
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<th>Compound</th>
<th>Carcinogenicity</th>
</tr>
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<tbody>
<tr>
<td>7439-92-1 lead</td>
<td>R</td>
</tr>
<tr>
<td>7440-02-0 nickel</td>
<td>R</td>
</tr>
<tr>
<td>7440-43-9 cadmium</td>
<td>K</td>
</tr>
<tr>
<td>7440-48-4 cobalt</td>
<td>R</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.
    Must not reach bodies of water or drainage ditch undiluted or unneutralized.
    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.
  - Other adverse effects: No further relevant information available.

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: UN3264
- UN proper shipping name
- DOT: Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid)
- ADR: 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID)
- IMDG, IATA: CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID)
### Transport hazard class(es)

- **DOT**
  - Class 8
  - Label Corrosive substances

- **ADR**
  - Class 8 (C1)
  - Label Corrosive substances

- **IMDG, IATA**
  - Class 8
  - Label Corrosive substances

### Environmental hazards:
- Not applicable.

### Special precautions for user
- **Hazard identification number (Kemler code):** 80
- **EMS Number:** F-A,S-B
- **Segregation groups:** Acids
- **Stowage Category:** A
- **Stowage Code:** SW2 Clear of living quarters.

### Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
- Not applicable.

### Transport/Additional information:
- **DOT**
- **Quantity limitations**
  - On passenger aircraft/rail: 5 L
  - On cargo aircraft only: 60 L

(Contd. of page 12)
Trade name: QCS-23

- **ADR**
  - **Excepted quantities (EQ)**
    - Code: E1
    - Maximum net quantity per inner packaging: 30 ml
    - Maximum net quantity per outer packaging: 1000 ml

- **IMDG**
  - **Limited quantities (LQ)** 5L
  - **Excepted quantities (EQ)**
    - Code: E1
    - Maximum net quantity per inner packaging: 30 ml
    - Maximum net quantity per outer packaging: 1000 ml

- **UN "Model Regulation":**
  - UN 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID), 8, III

15 Regulatory information

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **Sara**
  - **Section 355 (extremely hazardous substances):**
    - 7697-37-2 nitric acid

- **Section 313 (Specific toxic chemical listings):**
  - 7697-37-2 nitric acid
  - 7429-90-5 aluminium
  - 7439-92-1 lead
  - 7439-96-5 manganese
  - 7440-02-0 nickel
  - 7440-22-4 silver
  - 7440-28-0 thallium
  - 7440-39-3 barium
  - 7440-43-9 cadmium
  - 7440-47-3 chromium
  - 7440-48-4 cobalt
  - 7440-50-8 copper
  - 7440-66-6 zinc

- **TSCA (Toxic Substances Control Act):**
  - All components have the value ACTIVE.

- **Hazardous Air Pollutants**
  - 7439-92-1 lead
  - 7439-96-5 manganese
  - 7440-48-4 cobalt

(Contd. on page 15)
# Safety Data Sheet

acc. to OSHA HCS

Printing date 04/24/2020
Reviewed on 04/24/2020

Trade name: QCS-23

<table>
<thead>
<tr>
<th>· Proposition 65</th>
</tr>
</thead>
<tbody>
<tr>
<td>· Chemicals known to cause cancer:</td>
</tr>
<tr>
<td>7439-92-1 lead</td>
</tr>
<tr>
<td>7440-02-0 nickel</td>
</tr>
<tr>
<td>7440-43-9 cadmium</td>
</tr>
<tr>
<td>7440-48-4 cobalt</td>
</tr>
<tr>
<td>· Chemicals known to cause reproductive toxicity for females:</td>
</tr>
<tr>
<td>7439-92-1 lead</td>
</tr>
<tr>
<td>· Chemicals known to cause reproductive toxicity for males:</td>
</tr>
<tr>
<td>7439-92-1 lead</td>
</tr>
<tr>
<td>7440-43-9 cadmium</td>
</tr>
<tr>
<td>· Chemicals known to cause developmental toxicity:</td>
</tr>
<tr>
<td>7439-92-1 lead</td>
</tr>
<tr>
<td>7440-43-9 cadmium</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>· Carcinogenic categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>· EPA (Environmental Protection Agency)</td>
</tr>
<tr>
<td>7439-92-1 lead B2</td>
</tr>
<tr>
<td>7439-96-5 manganese D</td>
</tr>
<tr>
<td>7440-22-4 silver D</td>
</tr>
<tr>
<td>7440-39-3 barium D, CBD(inh), NL(oral)</td>
</tr>
<tr>
<td>7440-43-9 cadmium B1</td>
</tr>
<tr>
<td>7440-47-3 chromium D</td>
</tr>
<tr>
<td>7440-50-8 copper D</td>
</tr>
<tr>
<td>7440-66-6 zinc D, I, II</td>
</tr>
<tr>
<td>10043-35-3 boric acid I (oral)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>· TLV (Threshold Limit Value established by ACGIH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7429-90-5 aluminium A4</td>
</tr>
<tr>
<td>7439-92-1 lead A3</td>
</tr>
<tr>
<td>7440-02-0 nickel A5</td>
</tr>
<tr>
<td>7440-39-3 barium A4</td>
</tr>
<tr>
<td>7440-43-9 cadmium A2</td>
</tr>
<tr>
<td>7440-47-3 chromium A4</td>
</tr>
<tr>
<td>7440-48-4 cobalt A3</td>
</tr>
<tr>
<td>10043-35-3 boric acid A4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>· NIOSH-Ca (National Institute for Occupational Safety and Health)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7440-02-0 nickel</td>
</tr>
<tr>
<td>7440-43-9 cadmium</td>
</tr>
</tbody>
</table>

(Contd. on page 16)
Trade name: QCS-23

- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms**

![GHS05](image1) ![GHS08](image2)

- **Signal word** Danger
- **Hazard-determining components of labeling:**
  - nitric acid
  - cadmium
  - lead
  - cobalt
  - nickel
- **Hazard statements**
  - H290 May be corrosive to metals.
  - H314 Causes severe skin burns and eye damage.
  - H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
  - H317 May cause an allergic skin reaction.
  - H350 May cause cancer.
  - H360 May damage fertility or the unborn child.
- **Precautionary statements**
  - Obtain special instructions before use.
  - Do not handle until all safety precautions have been read and understood.
  - Keep only in original container.
  - Do not breathe dusts or mists.
  - Wash thoroughly after handling.
  - 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 swallowed: Rinse mouth. Do NOT induce vomiting.
  - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
  - 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.
  - Immediately call a poison center/doctor.
  - IF exposed or concerned: Get medical advice/attention.
  - Specific treatment (see on this label).
  - If skin irritation or rash occurs: Get medical advice/attention.
  - If experiencing respiratory symptoms: Call a poison center/doctor.
  - Wash contaminated clothing before reuse.
  - Absorb spillage to prevent material damage.
  - Store locked up.
  - Store in corrosive resistant container with a resistant inner liner.
  - Dispose of contents/container in accordance with local/regional/national/international regulations.
Trade name: QCS-23

- 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.

- Department issuing SDS: Environment protection department.
- Contact:
  High-Purity Standards
  Tel: 843-767-7900
  Fax: 843-767-7906
- Date of preparation / last revision 04/24/2020 / -
- 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)
  - NFFA: 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
  - PEL: Permissible Exposure Limit
  - REL: Recommended Exposure Limit
  - BEI: Biological Exposure Limit
  - Met. Corr. 1: Corrosive to metals – Category 1
  - Skin Corr. 1A: Skin corrosion/irritation – Category 1A
  - Eye Dam. 1: Serious eye damage/eye irritation – Category 1
  - Resp. Sens. 1: Respiratory sensitisation – Category 1
  - Skin Sens. 1: Skin sensitisation – Category 1
  - Carc. 1B: Carcinogenicity – Category 1B
  - Repr. 1A: Reproductive toxicity – Category 1A