1 Identification

- Product identifier
- **Product Name:** Quality Control Standard 21
- **Part Number:**
  - QC-21
  - QC-21-250
  - QC-21-500
- **Application of the substance / the mixture** Certified Reference Material
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**
  SPEX CertiPrep, LLC.
  203 Norcross Ave, Metuchen,
  NJ 08840 USA
- **Information department:** product safety department
- **Emergency telephone number:**
  - Emergency Phone Number (24 hours)
    CHEMTREC (800-424-9300)
  - Outside US: 703-527-3887

2 Hazard(s) identification

- **Classification of the substance or mixture**
  GHS05 Corrosion
  - Skin Corr. 1B **H314** Causes severe skin burns and eye damage.
  - Eye Dam. 1 **H318** Causes serious eye damage.
- **Label elements**
  - **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
  - **Hazard pictograms**
    - GHS05

- **Signal word** Danger
- **Hazard-determining components of labeling:**
  nitric acid
- **Hazard statements**
  H314 Causes severe skin burns and eye damage.
- **Precautionary statements**
  **If on skin (or hair):** Take off immediately all contaminated clothing. Rinse skin with water/shower.
  **If in eyes:** Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  **Specific treatment (see on this label).**
  Store locked up.
  Dispose of contents/container in accordance with local/regional/national/international regulations.
- **Classification system:**
- **NFPA ratings (scale 0 - 4)**
  - Health = 3
  - Fire = 0
  - Reactivity = 0
- **HMIS-ratings (scale 0 - 4)**
  - HEALTH: Health = 3
  - FIRE: Fire = 0
  - REACTIVITY: Reactivity = 0
- **Other hazards**
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.

(Contd. on page 2)
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%

- Chemical identification of the substance/preparation

  87-69-4 (+)-tartaric acid 0.1%
  7664-39-3 hydrofluoric acid 0.1%
  7439-96-5 manganese 0.01%
  7440-32-6 titanium 0.01%
  7439-92-1 Lead from Lead Oxide 0.01%
  7440-50-8 copper 0.01%
  7440-66-6 zinc powder -zinc dust (stabilized) 0.01%
  7440-38-2 arsenic 0.01%
  7439-89-6 iron 0.01%
  7440-48-4 cobalt 0.01%
  7440-47-3 chromium 0.01%
  7440-24-6 strontium 0.01%
  7440-41-7 beryllium 0.01%
  7440-62-2 Vanadium from Ammonium trioxovanadate 0.01%
  7439-93-2 Lithium from Lithium carbonate 0.01%
  7782-49-2 selenium 0.01%
  7440-43-9 cadmium (non-pyrophoric) 0.01%
  7440-70-2 calcium 0.01%
  7439-98-7 molybdenum 0.01%
  7440-28-0 Thallium from Thallium nitrate 0.01%
  7439-95-4 magnesium 0.01%
  7440-30-0 antimony 0.01%
  7440-02-0 nickel 0.01%
  7732-18-5 water, distilled, conductivity or of similar purity 94.59%

4 First-aid measures

- Description of first aid measures
- General information: Immediately remove any clothing soiled by the product.
- After inhalation: 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.
  Do not give anything to eat or drink - Do not induce vomiting
- 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 No further relevant information available.
- Advice for firefighters
- Protective equipment: No special measures required.
## 6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures** Wear protective equipment. Keep unprotected persons away.

- **Environmental precautions:** 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).
  - 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
  - 87-69-4 (+)-tartaric acid 1.6 mg/m³
  - 7439-96-5 manganese 3 mg/m³
  - 7440-32-6 titanium 30 mg/m³
  - 7439-92-1 Lead from Lead Oxide 0.15 mg/m³
  - 7440-50-8 copper 3 mg/m³
  - 7440-66-6 zinc powder -zinc dust (stabilized) 6 mg/m³
  - 7440-38-2 arsenic 1.5 mg/m³
  - 7439-89-6 iron 3.2 mg/m³
  - 7440-48-4 cobalt 0.18 mg/m³
  - 7440-47-3 chromium 1.5 mg/m³
  - 7440-24-6 strontium 30 mg/m³
  - 7440-41-7 beryllium 0.0025 mg/m³
  - 7440-62-2 Vanadium from Ammonium trioxovanadate 3 mg/m³
  - 7439-93-2 Lithium from Lithium carbonate 3.3 mg/m³
  - 7782-49-2 selenium 0.6 mg/m³
  - 7440-43-9 cadmium (non-pyrophoric) 0.10 mg/m³
  - 7439-98-7 molybdenum 30 mg/m³
  - 7440-28-0 Thallium from Thallium nitrate 0.06 mg/m³
  - 7439-95-4 magnesium 30 mg/m³
  - 7440-36-0 antimony 1.5 mg/m³
  - 7440-02-0 nickel 4.5 mg/m³

  ### PAC-2:

  - 7697-37-2 nitric acid 24 ppm
  - 87-69-4 (+)-tartaric acid 17 mg/m³
  - 7439-96-5 manganese 5 mg/m³
  - 7440-32-6 titanium 3.10 mg/m³
  - 7439-92-1 Lead from Lead Oxide 120 mg/m³
  - 7440-50-8 copper 33 mg/m³
  - 7440-66-6 zinc powder -zinc dust (stabilized) 21 mg/m³
  - 7440-38-2 arsenic 17 mg/m³
  - 7439-89-6 iron 35 mg/m³
  - 7440-48-4 cobalt 2 mg/m³
  - 7440-47-3 chromium 17 mg/m³
  - 7440-24-6 strontium 330 mg/m³
  - 7440-41-7 beryllium 0.025 mg/m³
  - 7440-62-2 Vanadium from Ammonium trioxovanadate 5.8 mg/m³
  - 7439-93-2 Lithium from Lithium carbonate 36 mg/m³
  - 7782-49-2 selenium 6.6 mg/m³
  - 7440-43-9 cadmium (non-pyrophoric) 0.76 mg/m³
  - 7439-98-7 molybdenum 3.80 mg/m³
  - 7440-28-0 Thallium from Thallium nitrate 3.3 mg/m³
  - 7439-95-4 magnesium 200 mg/m³
7 Handling and storage

- Handling:
  - Precautions for safe handling
    Ensure good ventilation/exhaustion at the workplace.
    Prevent formation of aerosols.
  - Information about protection against explosions and fires: No special measures required.
  - 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:
    7697-37-2 nitric acid
    - PEL: Long-term value: 5 mg/m³, 2 ppm
    - REL Short-term value: 10 mg/m³, 4 ppm
    - TLV Short-term value: 5 mg/m³, 2 ppm
    - Long-term value: 5.2 mg/m³, 2 ppm
  - 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.
Avoid contact with the eyes and skin.

- **Respiratory protection:**
  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:** According to product specification
    - **Odor:** Characteristic
    - **Odour Threshold:** Not applicable.
  - **pH-value:** Not applicable.

- **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 applicable.

- **Auto igniting:** Product is not selfigniting.

- **Danger of explosion:** Product does not present an explosion hazard.

- **Explosion limits:**
  - **Lower:** Not applicable.
  - **Upper:** Not applicable.

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

- **Density at 20 °C (68 °F):** 1.02796 g/cm³ (8.57833 lbs/gal)
  - **Relative density:** Not applicable.
  - **Vapor density:** Not applicable.
  - **Evaporation rate:** Not applicable.

- **Solubility in / Miscibility with**
  - **Water:** Not miscible or difficult to mix.

- **Partition coefficient (n-octanol/water):** Not applicable.

- **Viscosity:**
  - **Dynamic:** Not applicable.
  - **Kinematic:** Not applicable.

- **Solvent content:**
  - **Water:** 94.6 %

(Contd. on page 6)
Product Name: Quality Control Standard 21

10 Stability and reactivity

- Reactivity: No further relevant information available.
- Chemical stability: None.
- 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:
  - Primary irritant effect:
    - on the skin: Caustic effect on skin and mucous membranes.
    - on the eye: Strong caustic effect.
  - Sensitization: No sensitizing effects known.
- Additional toxicological information:
  The product shows the following dangers according to internally approved calculation methods for preparations:
  - Corrosive
  - 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)
    - 7439-92-1 Lead from Lead Oxide 2B
    - 7440-38-2 arsenic 1
    - 7440-48-4 cobalt 2B
    - 7440-47-3 chromium 3
    - 7440-41-7 beryllium 1
    - 7782-49-2 selenium 3
    - 7440-43-9 cadmium (non-pyrophoric) 1
    - 7440-02-0 nickel 2B
  - NTP (National Toxicology Program)
    - 7439-92-1 Lead from Lead Oxide R
    - 7440-38-2 arsenic R
    - 7440-48-4 cobalt R
    - 7440-41-7 beryllium R
    - 7440-43-9 cadmium (non-pyrophoric) R
    - 7440-02-0 nickel R
  - OSHA-Ca (Occupational Safety & Health Administration)
    - 7440-38-2 arsenic R
    - 7440-43-9 cadmium (non-pyrophoric) R

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 2 (Self-assessment): hazardous for water
    - Do not allow product to reach ground water, water course or sewage system.
    - Must not reach bodies of water or drainage ditch undiluted or unneutralized.
47.0.8

Danger to drinking water if even 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.

### 14 Transport information

- UN-Number
  - DOT, ADR, IMDG, IATA: UN3264

- UN proper shipping name
  - DOT: Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid solution, Hydrofluoric acid)
  - ADR: 3264 Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid solution, Hydrofluoric acid)
  - IMDG, IATA: CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID SOLUTION, HYDROFLUORIC ACID)

- Transport hazard class(es)
  - DOT
    - Class: 8 Corrosive substances
    - Label: 8
  - ADR, IMDG, IATA
    - Class: 8 Corrosive substances
    - Label: 8

- Packing group
  - DOT, ADR, IMDG, IATA: III

- Environmental hazards:
  - Not applicable.

- Special precautions for user
  - Danger code (Kepler): Warning: Corrosive substances
  - EMS Number: 80 F-A,S-B
  - Segregation groups: Acids A
  - Stowage Category: SW2 Clear of living quarters.

- Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
  - Not applicable.

- Transport/Additional information:
  - ADR:
    - Excepted quantities (EQ)
      - Code: E1
      - Maximum net quantity per inner packaging: 30 ml
      - Maximum net quantity per outer packaging: 1000 ml
### 15 Regulatory information

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **Sara**

<table>
<thead>
<tr>
<th>Section 313 (Specific toxic chemical listings):</th>
</tr>
</thead>
<tbody>
<tr>
<td>7697-37-2 nitric acid</td>
</tr>
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<td>7440-50-8 copper</td>
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<tr>
<td>7440-66-6 zinc powder -zinc dust (stabilized)</td>
</tr>
<tr>
<td>7440-36-2 arsenic</td>
</tr>
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<td>7440-48-4 cobalt</td>
</tr>
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<td>7782-49-2 selenium</td>
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<tr>
<td>7440-43-9 cadmium (non-pyrophoric)</td>
</tr>
<tr>
<td>7440-28-0 Thallium from Thallium nitrate</td>
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<tr>
<td>7440-36-0 antimony</td>
</tr>
<tr>
<td>7440-02-0 nickel</td>
</tr>
</tbody>
</table>

- **TSCA (Toxic Substances Control Act):**

| 7697-37-2 nitric acid |
| 87-69-4 (+)-tartaric acid |
| 7439-96-5 manganese |
| 7440-32-6 titanium |
| 7439-92-1 Lead from Lead Oxide |
| 7440-50-8 copper |
| 7440-66-6 zinc powder -zinc dust (stabilized) |
| 7440-38-2 arsenic |
| 7439-89-6 iron |
| 7440-48-4 cobalt |
| 7440-47-3 chromium |
| 7440-24-6 strontium |
| 7440-41-7 beryllium |
| 7440-62-2 Vanadium from Ammonium trioxovanadate |
| 7439-93-2 Lithium from Lithium carbonate |
| 7782-49-2 selenium |
| 7440-43-9 cadmium (non-pyrophoric) |
| 7440-70-2 calcium |
| 7439-98-7 molybdenum |
| 7440-28-0 Thallium from Thallium nitrate |
| 7439-95-4 magnesium |
| 7440-36-0 antimony |
| 7440-02-0 nickel |
| 7732-18-5 water, distilled, conductivity or of similar purity |

(Contd. on page 9)
- Proposition 65

- Chemicals known to cause cancer:
  7439-92-1 Lead from Lead Oxide
  7440-38-2 arsenic
  7440-48-4 cobalt
  7440-41-7 beryllium
  7440-43-9 cadmium (non-pyrophoric)
  7440-02-0 nickel

- Chemicals known to cause reproductive toxicity for females:
  None of the ingredients is listed.

- Chemicals known to cause reproductive toxicity for males:
  7440-43-9 cadmium (non-pyrophoric)

- Chemicals known to cause developmental toxicity:
  7439-93-2 Lithium from Lithium carbonate
  7440-43-9 cadmium (non-pyrophoric)

- Carcinogenic categories

<table>
<thead>
<tr>
<th>Compound</th>
<th>Carcinogenic Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>7439-96-3 manganese</td>
<td>D</td>
</tr>
<tr>
<td>7439-92-1 Lead from Lead Oxide</td>
<td>B2</td>
</tr>
<tr>
<td>7440-50-8 copper</td>
<td>D</td>
</tr>
<tr>
<td>7440-66-6 zinc powder -zinc dust (stabilized)</td>
<td>D, L, II</td>
</tr>
<tr>
<td>7440-38-2 arsenic</td>
<td>A</td>
</tr>
<tr>
<td>7440-41-7 beryllium</td>
<td>B1, K/L(inh), CBD(oral)</td>
</tr>
<tr>
<td>7782-49-2 selenium</td>
<td>D</td>
</tr>
<tr>
<td>7440-43-9 cadmium (non-pyrophoric)</td>
<td>B1</td>
</tr>
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</table>

- TLV (Threshold Limit Value established by ACGIH)

<table>
<thead>
<tr>
<th>Compound</th>
<th>TLV Category</th>
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<tbody>
<tr>
<td>7439-92-1 Lead from Lead Oxide</td>
<td>A3</td>
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<tr>
<td>7440-38-2 arsenic</td>
<td>A1</td>
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<tr>
<td>7440-43-9 cadmium (non-pyrophoric)</td>
<td>A3</td>
</tr>
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<td>7439-98-7 molybdenum</td>
<td>A3</td>
</tr>
<tr>
<td>7440-02-0 nickel</td>
<td>A3</td>
</tr>
</tbody>
</table>

- NIOSH-Ca (National Institute for Occupational Safety and Health)

<table>
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<th>Compound</th>
<th>NIOSH Category</th>
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</tbody>
</table>

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

GHS05

- Signal word Danger

- Hazard-determining components of labeling: nitric acid
- Hazard statements
  H314 Causes severe skin burns and eye damage.
- Precautionary statements
  If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
  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.
  Specific treatment (see on this label).
  Store locked up.
  Dispose of contents/container in accordance with local/regional/national/international regulations.
Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

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: product safety department
- Contact: SPEX CertiPrep, LLC. 1-732-549-7144
- Date of preparation / last revision 08/10/2018 / -
- 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
  - 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)
  - ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
  - 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
  - Skin Corr. 1B: Skin corrosion/irritation – Category 1B
  - Eye Dam. 1: Serious eye damage/eye irritation – Category 1