

## Safety Data Sheet

Classified According to OSHA Hazard Communication Standard (HCS)

### SECTION 1: Identification

#### 1.1. Product Identifier

**Trade Name or Designation:** Trace Metals I Standard, for Water

**Product Number:** RTRACE1

**Other Identifying Product Numbers:** RTRACE1-100

#### 1.2. Recommended Use and Restrictions on Use

General Laboratory Reagent

#### 1.3. Details of the Supplier of the Safety Data Sheet

**Company:** Ricca Chemical Company

**Address:** 448 West Fork Drive

Arlington, TX 76012 USA

**Telephone:** 888-467-4222

#### 1.4. Emergency Telephone Number (24 hours)

CHEMTREC (USA)

800-424-9300

CHEMTREC (International)

1+ 703-527-3887

### SECTION 2: Hazard(s) Identification

#### 2.1. Classification of the Substance or Mixture

For the full text of the Hazard and Precautionary Statements listed below, see Section 16.

| Hazard Class                | Category   | Hazard Statements: | Precautionary Statements:                                                                                 |
|-----------------------------|------------|--------------------|-----------------------------------------------------------------------------------------------------------|
| Skin Corrosion / Irritation | Category 1 | H314               | P260, P264, P280, P301+P330+P331, P303+P361+P353, P363, P304+P340, P310, P321, P305+P351+P338, P405, P501 |
| Eye Damage / Irritation     | Category 1 | H318               | P280, P305+P351+P338, P310                                                                                |
| Corrosive to Metals         | Category 1 | H290               | P234, P390, P406                                                                                          |

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### 2.2. GHS Label Elements

Pictograms:



Signal Word: **Danger**

Hazard Statements:

| Hazard Number | Hazard Statement                         |
|---------------|------------------------------------------|
| H290          | May be corrosive to metals.              |
| H314          | Causes severe skin burns and eye damage. |
| H318          | Causes serious eye damage.               |

Precautionary Statements:

| Precautionary Number | Precautionary Statement                                                                                                          |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------|
| P234                 | Keep only in original container.                                                                                                 |
| P260                 | Do not breathe fumes, mist, vapors, or spray.                                                                                    |
| P264                 | Wash arms, hands and face thoroughly after handling.                                                                             |
| P280                 | Wear protective gloves and eye protection.                                                                                       |
| P301+P330+P331       | IF SWALLOWED: rinse mouth. Do NOT induce vomiting.                                                                               |
| P303+P361+P353       | IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.                                     |
| P304+P340            | IF INHALED: Remove person to fresh air and keep comfortable for breathing.                                                       |
| P305+P351+P338       | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| P310                 | Immediately call a POISON CENTER or physician.                                                                                   |
| P321                 | Specific treatment (Wash areas of contact with water.).                                                                          |
| P363                 | Wash contaminated clothing before reuse.                                                                                         |
| P390                 | Absorb spillage to prevent material damage.                                                                                      |
| P405                 | Store locked up.                                                                                                                 |
| P406                 | Store in corrosive resistant container with a resistant inner liner.                                                             |
| P501                 | Dispose of contents in accordance with local, state, federal and international regulations.                                      |

### 2.4. Hazards not Otherwise Classified or Covered by GHS

Data not available.

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## SECTION 3: Composition / Information on Ingredients

### 3.1. Components of Substance or Mixture

| Chemical Name                | Formula                                              | Molecular Weight | CAS Number | Weight% |
|------------------------------|------------------------------------------------------|------------------|------------|---------|
| Water                        | H <sub>2</sub> O                                     | 18.01 g/mol      | 7732-18-5  | 94.26   |
| Nitric Acid                  | HNO <sub>3</sub>                                     | 63.01 g/mol      | 7697-37-2  | 4.87    |
| Aluminum Nitrate Nonahydrate | Al(NO <sub>3</sub> ) <sub>3</sub> ·9H <sub>2</sub> O | 375.13 g/mol     | 7784-27-2  | 0.68    |
| Chromium Nitrate Nonahydrate | Cr(NO <sub>3</sub> ) <sub>3</sub> ·9H <sub>2</sub> O | 238.01 g/mol     | 7789-02-8  | < 0.1   |
| Vanadium                     | V                                                    | 50.94 g/mol      | 7440-62-2  | < 0.1   |
| Zinc                         | Zn                                                   | 65.40 g/mol      | 7440-66-6  | < 0.1   |
| Copper                       | Cu                                                   | 63.54 g/mol      | 7440-50-8  | < 0.1   |
| Cobalt                       | Co                                                   | 58.93 g/mol      | 7440-48-4  | < 0.1   |
| Beryllium                    | Be                                                   | 9.01 g/mol       | 7440-41-7  | < 0.1   |
| Arsenic                      | As                                                   | 74.92 g/mol      | 7440-38-2  | < 0.1   |
| Nickel                       | Ni                                                   | 58.69 g/mol      | 7440-02-0  | < 0.1   |
| Manganese                    | Mn                                                   | 54.93 g/mol      | 7439-96-5  | < 0.1   |
| Lead                         | Pb                                                   | 207.2 g/mol      | 7439-92-1  | < 0.1   |
| Iron                         | Fe                                                   | 55.84 g/mol      | 7439-89-6  | < 0.1   |
| Selenium Dioxide             | SeO <sub>2</sub>                                     | 110.95 g/mol     | 7446-08-4  | < 0.1   |
| Cadmium                      | Cd                                                   | 112.41 g/mol     | 7440-43-9  | < 0.1   |
| Hydrofluoric Acid            | HF                                                   | 20.00 g/mol      | 7664-39-3  | < 0.1   |
| Mercury                      | Hg                                                   | 200.59 g/mol     | 7439-97-6  | < 0.1   |

## SECTION 4: First-Aid Measures

### 4.1. General First Aid Information

**Eye Contact:** IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. May cause irritation, redness, pain, and tearing.

**Inhalation:** IF INHALED: Remove person to fresh air and keep comfortable for breathing.

**Skin Contact:** IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. May cause irritation, redness and pain. Contact will discolor skin yellow-brown depending on exposure which will wear off after a period of time.

**Ingestion:** IF SWALLOWED: rinse mouth. Do NOT induce vomiting. Dilute with water or milk. Do not induce vomiting. Call a physician if necessary.

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### 4.2. Most Important Symptoms and Effects, Acute and Delayed

Causes severe skin burns and eye damage. Causes serious eye damage. Contains low levels of known and suspected carcinogens. Corrosive Liquid. May be fatal if swallowed. Avoid contact with skin, eyes, and clothing. Avoid breathing vapor. If swallowed, do not induce vomiting. Dilute with water and call a physician. Wash areas of contact with plenty of water. Potential symptoms of overexposure are irritation of the eyes, mucous membranes and skin, dental erosion, bronchitis, pneumonitis, delayed pulmonary edema. EYE CONTACT: May cause irritation, redness, pain, and tearing. SKIN CONTACT: May cause irritation, redness and pain. Contact will discolor skin yellow-brown depending on exposure which will wear off after a period of time.

### 4.3. Medical Attention or Special Treatment Needed

Immediately call a POISON CENTER or physician. Specific treatment (Wash areas of contact with water.). Irrigate immediately with large quantity of water for at least 15 minutes. Call a physician if irritation develops. Remove to fresh air. Give artificial respiration if necessary. If breathing is difficult, g oxygen. Immediately flush with plenty of water for at least 15 minutes. Remove any contaminated clothing. Wash with soap and water, then flush again with water. Call a physician if irritation develops. Dilute with water or milk. Do not induce vomiting. Call a physician if necessary.

## SECTION 5: Fire-Fighting Measures

### 5.1. Extinguishing Media

Use water or water spray.

### 5.2. Specific Hazards Arising from the Substance or Mixture

Not combustible, but substance is an oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition. Can react with metals to release flammable hydrogen gas.

### 5.3. Special Protective Equipment for Firefighters

Use protective clothing and breathing equipment appropriate for the surrounding fire.

## SECTION 6: Accidental Release Measures

### 6.1. Personal Precautions, Protective Equipment and Emergency Procedures

Wear protective gloves and eye protection.

### 6.2. Cleanup and Containment Methods and Materials

Do not flush to sewer. Absorb with suitable material. Containerize for disposal with a hazardous waste disposal facility. Dispose of in accordance with local regulations.

## SECTION 7: Handling and Storage

### 7.1. Precautions for Safe Handling and Storage Conditions

Store in corrosive resistant container with a resistant inner liner. As with all chemicals, wash hands thoroughly after handling. Avoid contact with eyes and skin. Protect from freezing and physical damage.

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### SECTION 8: Exposure Controls / Personal Protection

#### 8.1 Control Parameters

| Chemical Name         | Limit Type  | Country | Exposure Limit                                                                                                                     | Information Source                                                |
|-----------------------|-------------|---------|------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| Lead (7439-92-1)      | PEL         | USA     | "30 µg/m³ Action Level (See 29 CFR 1910.1025); 50 µg/m³ TWA" As Lead [7439-92-1]                                                   | U.S. - OSHA - Specifically Regulated Chemicals with PELs          |
| Lead (7439-92-1)      | TLV-TWA     | USA     | "0.05 mg/m³ TWA" As Lead [7439-92-1]                                                                                               | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Lead (7439-92-1)      | TWA         | USA     | "50 µg/m³ TWA" As Lead [7439-92-1]                                                                                                 | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)          |
| Lead (7439-92-1)      | TLV-TWA     | USA     | 0.05 mg/m³ TWA                                                                                                                     | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Lead (7439-92-1)      | TWA         | USA     | 50 µg/m³ TWA                                                                                                                       | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)          |
| Lead (7439-92-1)      | PEL         | USA     | 30 µg/m³ Action Level (See 29 CFR 1910.1025); 50 µg/m³ TWA                                                                         | U.S. - OSHA - Specifically Regulated Chemicals with PELs          |
| Lead (7439-92-1)      | PEL         | USA     | "30 µg/m³ Action Level (See 29 CFR 1910.1025, as Pb); 50 µg/m³ TWA (as Pb)" As Lead, inorganic compounds [RR-00538-9]              | U.S. - OSHA - Specifically Regulated Chemicals with PELs          |
| Lead (7439-92-1)      | TLV-TWA     | USA     | "0.05 mg/m³ TWA (as Pb)" As Lead inorganic compounds [RR-00538-9]                                                                  | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Lead (7439-92-1)      | TWA         | USA     | "50 µg/m³ TWA (as Pb)" As Lead, inorganic compounds [RR-00538-9]                                                                   | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)          |
| Manganese (7439-96-5) | TLV-TWA     | USA     | "0.02 mg/m³ TWA (respirable particulate matter); 0.1 mg/m³ TWA (inhalable particulate matter)" As Manganese, elemental [7439-96-5] | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Manganese (7439-96-5) | PEL-Ceiling | USA     | "5 mg/m³ Ceiling (fume)" As Manganese [7439-96-5]                                                                                  | U.S. - OSHA - Final PELs - Ceiling Limits                         |

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|                       |             |     |                                                                                                                                                            |                                                                   |
|-----------------------|-------------|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| Manganese (7439-96-5) | PEL-Ceiling | USA | "5 mg/m <sup>3</sup> Ceiling (fume)" As Manganese [7439-96-5]                                                                                              | U.S. - OSHA - Final PELs - Ceiling Limits                         |
| Manganese (7439-96-5) | TLV-TWA     | USA | "0.02 mg/m <sup>3</sup> TWA (respirable particulate matter); 0.1 mg/m <sup>3</sup> TWA (inhalable particulate matter)" As Manganese, elemental [7439-96-5] | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Manganese (7439-96-5) | TLV-TWA     | USA | "0.02 mg/m <sup>3</sup> TWA (respirable particulate matter); 0.1 mg/m <sup>3</sup> TWA (inhalable particulate matter)" As Manganese, elemental [7439-96-5] | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Manganese (7439-96-5) | PEL-Ceiling | USA | "5 mg/m <sup>3</sup> Ceiling (fume)" As Manganese [7439-96-5]                                                                                              | U.S. - OSHA - Final PELs - Ceiling Limits                         |
| Manganese (7439-96-5) | TLV-TWA     | USA | 0.02 mg/m <sup>3</sup> TWA (respirable particulate matter); 0.1 mg/m <sup>3</sup> TWA (inhalable particulate matter)                                       | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Manganese (7439-96-5) | PEL-Ceiling | USA | 5 mg/m <sup>3</sup> Ceiling (fume)                                                                                                                         | U.S. - OSHA - Final PELs - Ceiling Limits                         |
| Manganese (7439-96-5) | TLV-TWA     | USA | "0.02 mg/m <sup>3</sup> TWA (respirable particulate matter); 0.1 mg/m <sup>3</sup> TWA (inhalable particulate matter)" As Manganese, elemental [7439-96-5] | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Manganese (7439-96-5) | PEL-Ceiling | USA | "5 mg/m <sup>3</sup> Ceiling (fume)" As Manganese [7439-96-5]                                                                                              | U.S. - OSHA - Final PELs - Ceiling Limits                         |
| Manganese (7439-96-5) | PEL-Ceiling | USA | "5 mg/m <sup>3</sup> Ceiling (fume)" As Manganese [7439-96-5]                                                                                              | U.S. - OSHA - Final PELs - Ceiling Limits                         |
| Manganese (7439-96-5) | TLV-TWA     | USA | "0.02 mg/m <sup>3</sup> TWA (respirable particulate matter); 0.1 mg/m <sup>3</sup> TWA (inhalable particulate matter)" As Manganese, elemental [7439-96-5] | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Manganese (7439-96-5) | PEL-Ceiling | USA | "5 mg/m <sup>3</sup> Ceiling (as Mn)" As Manganese compounds [RR-00602-0]                                                                                  | U.S. - OSHA - Final PELs - Ceiling Limits                         |

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|                       |             |     |                                                                                                                                       |                                                                   |
|-----------------------|-------------|-----|---------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| Manganese (7439-96-5) | TLV-TWA     | USA | 0.02 mg/m <sup>3</sup> TWA (respirable particulate matter, as Mn);<br>0.1 mg/m <sup>3</sup> TWA (inhalable particulate matter, as Mn) | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Mercury (7439-97-6)   | TLV-TWA     | USA | "0.025 mg/m <sup>3</sup> TWA" As Mercury, elemental<br>[7439-97-6]                                                                    | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Mercury (7439-97-6)   | PEL-Ceiling | USA | "0.1 mg/m <sup>3</sup> Ceiling" As Mercury [7439-97-6]                                                                                | U.S. - OSHA - Final PELs - Ceiling Limits                         |
| Mercury (7439-97-6)   | TLV-TWA     | USA | "0.025 mg/m <sup>3</sup> TWA" As Mercury, elemental<br>[7439-97-6]                                                                    | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Mercury (7439-97-6)   | PEL-Ceiling | USA | "0.1 mg/m <sup>3</sup> Ceiling" As Mercury [7439-97-6]                                                                                | U.S. - OSHA - Final PELs - Ceiling Limits                         |
| Mercury (7439-97-6)   | PEL-Ceiling | USA | "0.1 mg/m <sup>3</sup> Ceiling" As Mercury [7439-97-6]                                                                                | U.S. - OSHA - Final PELs - Ceiling Limits                         |
| Mercury (7439-97-6)   | TLV-TWA     | USA | "0.025 mg/m <sup>3</sup> TWA" As Mercury, elemental<br>[7439-97-6]                                                                    | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Mercury (7439-97-6)   | TLV-TWA     | USA | 0.025 mg/m <sup>3</sup> TWA                                                                                                           | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Mercury (7439-97-6)   | PEL-Ceiling | USA | 0.1 mg/m <sup>3</sup> Ceiling                                                                                                         | U.S. - OSHA - Final PELs - Ceiling Limits                         |
| Mercury (7439-97-6)   | TLV-TWA     | USA | "0.025 mg/m <sup>3</sup> TWA" As Mercury, elemental<br>[7439-97-6]                                                                    | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Mercury (7439-97-6)   | PEL-Ceiling | USA | "0.1 mg/m <sup>3</sup> Ceiling" As Mercury [7439-97-6]                                                                                | U.S. - OSHA - Final PELs - Ceiling Limits                         |
| Mercury (7439-97-6)   | TLV-TWA     | USA | "0.025 mg/m <sup>3</sup> TWA" As Mercury, elemental<br>[7439-97-6]                                                                    | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Mercury (7439-97-6)   | PEL-Ceiling | USA | "0.1 mg/m <sup>3</sup> Ceiling" As Mercury [7439-97-6]                                                                                | U.S. - OSHA - Final PELs - Ceiling Limits                         |
| Mercury (7439-97-6)   | TLV-TWA     | USA | "0.025 mg/m <sup>3</sup> TWA" As Mercury, elemental<br>[7439-97-6]                                                                    | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Mercury (7439-97-6)   | PEL-Ceiling | USA | "0.1 mg/m <sup>3</sup> Ceiling" As Mercury [7439-97-6]                                                                                | U.S. - OSHA - Final PELs - Ceiling Limits                         |
| Mercury (7439-97-6)   | PEL-Ceiling | USA | "0.1 mg/m <sup>3</sup> Ceiling" As Mercury [7439-97-6]                                                                                | U.S. - OSHA - Final PELs - Ceiling Limits                         |



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|                     |             |     |                                                                                             |                                                                   |
|---------------------|-------------|-----|---------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| Mercury (7439-97-6) | TLV-TWA     | USA | "0.025 mg/m <sup>3</sup> TWA" As Mercury, elemental [7439-97-6]                             | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Mercury (7439-97-6) | TLV-TWA     | USA | 0.025 mg/m <sup>3</sup> TWA (as Hg)                                                         | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Mercury (7439-97-6) | PEL-Ceiling | USA | "0.1 mg/m <sup>3</sup> Ceiling" As Mercury [7439-97-6]                                      | U.S. - OSHA - Final PELs - Ceiling Limits                         |
| Mercury (7439-97-6) | TLV-TWA     | USA | "0.025 mg/m <sup>3</sup> TWA" As Mercury, elemental [7439-97-6]                             | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Nickel (7440-02-0)  | TWA         | USA | "1 mg/m <sup>3</sup> TWA" As Nickel [7440-02-0]                                             | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)          |
| Nickel (7440-02-0)  | TLV-TWA     | USA | "1.5 mg/m <sup>3</sup> TWA (inhalable particulate matter)" As Nickel, elemental [7440-02-0] | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Nickel (7440-02-0)  | TLV-TWA     | USA | "1.5 mg/m <sup>3</sup> TWA (inhalable particulate matter)" As Nickel, elemental [7440-02-0] | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Nickel (7440-02-0)  | TWA         | USA | "1 mg/m <sup>3</sup> TWA" As Nickel [7440-02-0]                                             | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)          |
| Nickel (7440-02-0)  | TLV-TWA     | USA | "1.5 mg/m <sup>3</sup> TWA (inhalable particulate matter)" As Nickel, elemental [7440-02-0] | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Nickel (7440-02-0)  | TWA         | USA | "1 mg/m <sup>3</sup> TWA" As Nickel [7440-02-0]                                             | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)          |
| Nickel (7440-02-0)  | TWA         | USA | "1 mg/m <sup>3</sup> TWA" As Nickel [7440-02-0]                                             | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)          |
| Nickel (7440-02-0)  | TLV-TWA     | USA | "1.5 mg/m <sup>3</sup> TWA (inhalable particulate matter)" As Nickel, elemental [7440-02-0] | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Nickel (7440-02-0)  | TLV-TWA     | USA | "1.5 mg/m <sup>3</sup> TWA (inhalable particulate matter)" As Nickel, elemental [7440-02-0] | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Nickel (7440-02-0)  | TWA         | USA | "1 mg/m <sup>3</sup> TWA" As Nickel [7440-02-0]                                             | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)          |



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|---------------------|---------|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| Nickel (7440-02-0)  | TLV-TWA | USA | "1.5 mg/m <sup>3</sup> TWA (inhalable particulate matter)" As Nickel, elemental [7440-02-0]                                                                   | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Nickel (7440-02-0)  | TWA     | USA | "1 mg/m <sup>3</sup> TWA" As Nickel [7440-02-0]                                                                                                               | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)          |
| Nickel (7440-02-0)  | TLV-TWA | USA | 1.5 mg/m <sup>3</sup> TWA (inhalable particulate matter)                                                                                                      | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Nickel (7440-02-0)  | TWA     | USA | 1 mg/m <sup>3</sup> TWA                                                                                                                                       | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)          |
| Nickel (7440-02-0)  | TLV-TWA | USA | "1.5 mg/m <sup>3</sup> TWA (inhalable particulate matter)" As Nickel, elemental [7440-02-0]                                                                   | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Nickel (7440-02-0)  | TWA     | USA | "1 mg/m <sup>3</sup> TWA" As Nickel [7440-02-0]                                                                                                               | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)          |
| Arsenic (7440-38-2) | TLV-TWA | USA | "0.01 mg/m <sup>3</sup> TWA" As Arsenic, elemental [7440-38-2]                                                                                                | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Arsenic (7440-38-2) | TLV-TWA | USA | "0.01 mg/m <sup>3</sup> TWA" As Arsenic, elemental [7440-38-2]                                                                                                | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Arsenic (7440-38-2) | TLV-TWA | USA | 0.01 mg/m <sup>3</sup> TWA                                                                                                                                    | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Arsenic (7440-38-2) | TLV-TWA | USA | "0.01 mg/m <sup>3</sup> TWA (as As)" As Arsenic inorganic compounds [RR-00065-7]                                                                              | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Arsenic (7440-38-2) | TWA     | USA | "10 µg/m <sup>3</sup> TWA (as As)" As Arsenic, inorganic compounds [RR-00065-7]                                                                               | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)          |
| Arsenic (7440-38-2) | PEL     | USA | "10 µg/m <sup>3</sup> TWA (See 29 CFR 1910.1018; except Arsine, as As); 5 µg/m <sup>3</sup> Action Level (as As)" As Inorganic arsenic compounds [RR-00065-7] | U.S. - OSHA - Specifically Regulated Chemicals with PELs          |
| Arsenic (7440-38-2) | TLV-TWA | USA | "0.01 mg/m <sup>3</sup> TWA" As Arsenic, elemental [7440-38-2]                                                                                                | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |

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|-----------------------|-------------|-----|------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| Arsenic (7440-38-2)   | TLV-TWA     | USA | "0.01 mg/m <sup>3</sup> TWA" As Arsenic, elemental [7440-38-2]                                                                                       | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Beryllium (7440-41-7) | TWA         | USA | 0.2 µg/m <sup>3</sup> TWA                                                                                                                            | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)          |
| Beryllium (7440-41-7) | TLV-TWA     | USA | 0.00005 mg/m <sup>3</sup> TWA (inhalable particulate matter)                                                                                         | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Beryllium (7440-41-7) | PEL-STEL    | USA | 2 µg/m <sup>3</sup> STEL (see 29 CFR 1910.1024)                                                                                                      | U.S. - OSHA - Final PELs - Short Term Exposure Limits             |
| Beryllium (7440-41-7) | PEL-Ceiling | USA | 2 µg/m <sup>3</sup> Ceiling                                                                                                                          | U.S. - OSHA - Final PELs - Ceiling Limits                         |
| Beryllium (7440-41-7) | PEL         | USA | 0.2 µg/m <sup>3</sup> TWA (See 29 CFR 1910.1024); 0.1 µg/m <sup>3</sup> Action Level; 2.0 µg/m <sup>3</sup> STEL (15 min)                            | U.S. - OSHA - Specifically Regulated Chemicals with PELs          |
| Beryllium (7440-41-7) | PEL-Ceiling | USA | "2 µg/m <sup>3</sup> Ceiling (as Be)" As Beryllium compounds [RR-00557-2]                                                                            | U.S. - OSHA - Final PELs - Ceiling Limits                         |
| Beryllium (7440-41-7) | TWA         | USA | "0.2 µg/m <sup>3</sup> TWA (as Be)" As Beryllium compounds [RR-00557-2]                                                                              | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)          |
| Beryllium (7440-41-7) | TLV-TWA     | USA | "0.00005 mg/m <sup>3</sup> TWA (inhalable particulate matter, as Be)" As Beryllium compounds [RR-00557-2]                                            | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Beryllium (7440-41-7) | PEL-Ceiling | USA | "2 µg/m <sup>3</sup> Ceiling" As Beryllium [7440-41-7]                                                                                               | U.S. - OSHA - Final PELs - Ceiling Limits                         |
| Beryllium (7440-41-7) | PEL         | USA | "0.2 µg/m <sup>3</sup> TWA (See 29 CFR 1910.1024); 0.1 µg/m <sup>3</sup> Action Level; 2.0 µg/m <sup>3</sup> STEL (15 min)" As Beryllium [7440-41-7] | U.S. - OSHA - Specifically Regulated Chemicals with PELs          |
| Beryllium (7440-41-7) | TLV-TWA     | USA | "0.00005 mg/m <sup>3</sup> TWA (inhalable particulate matter)" As Beryllium [7440-41-7]                                                              | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Beryllium (7440-41-7) | PEL-STEL    | USA | "2 µg/m <sup>3</sup> STEL (see 29 CFR 1910.1024)" As Beryllium [7440-41-7]                                                                           | U.S. - OSHA - Final PELs - Short Term Exposure Limits             |
| Beryllium (7440-41-7) | TWA         | USA | "0.2 µg/m <sup>3</sup> TWA" As Beryllium [7440-41-7]                                                                                                 | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)          |

## Safety Data Sheet

|                     |             |     |                                                                                                                                                                                                                                                                                                |                                                                   |
|---------------------|-------------|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| Cadmium (7440-43-9) | PEL-Ceiling | USA | 0.3 mg/m <sup>3</sup> Ceiling (applies to any operations or sectors for which the Cadmium standard is stayed or otherwise not in effect, fume); 0.6 mg/m <sup>3</sup> Ceiling (applies to any operations or sectors for which the Cadmium standard is stayed or otherwise not in effect, dust) | U.S. - OSHA - Final PELs - Ceiling Limits                         |
| Cadmium (7440-43-9) | TWA         | USA | 5 µg/m <sup>3</sup> TWA                                                                                                                                                                                                                                                                        | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)          |
| Cadmium (7440-43-9) | TLV-TWA     | USA | 0.01 mg/m <sup>3</sup> TWA; 0.002 mg/m <sup>3</sup> TWA (respirable particulate matter)                                                                                                                                                                                                        | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Cadmium (7440-43-9) | PEL         | USA | 5 µg/m <sup>3</sup> TWA (See 29 CFR 1910.1027); 2.5 µg/m <sup>3</sup> Action Level                                                                                                                                                                                                             | U.S. - OSHA - Specifically Regulated Chemicals with PELs          |
| Cadmium (7440-43-9) | TLV-TWA     | USA | "0.01 mg/m <sup>3</sup> TWA (as Cd); 0.002 mg/m <sup>3</sup> TWA (respirable particulate matter, as Cd)" As Cadmium compounds [RR-00559-4]                                                                                                                                                     | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Cadmium (7440-43-9) | PEL         | USA | "5 µg/m <sup>3</sup> TWA (See 29 CFR 1910.1027, as Cd); 2.5 µg/m <sup>3</sup> Action Level (as Cd)" As Cadmium compounds [RR-00559-4]                                                                                                                                                          | U.S. - OSHA - Specifically Regulated Chemicals with PELs          |
| Cobalt (7440-48-4)  | TWA         | USA | "0.1 mg/m <sup>3</sup> TWA (dust and fume)" As Cobalt metal [7440-48-4]                                                                                                                                                                                                                        | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)          |
| Cobalt (7440-48-4)  | TLV-TWA     | USA | "0.02 mg/m <sup>3</sup> TWA (inhalable particulate matter)" As Cobalt [7440-48-4]                                                                                                                                                                                                              | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Cobalt (7440-48-4)  | TLV-TWA     | USA | "0.02 mg/m <sup>3</sup> TWA (inhalable particulate matter)" As Cobalt [7440-48-4]                                                                                                                                                                                                              | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Cobalt (7440-48-4)  | TWA         | USA | "0.1 mg/m <sup>3</sup> TWA (dust and fume)" As Cobalt metal [7440-48-4]                                                                                                                                                                                                                        | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)          |

## Safety Data Sheet

|                    |         |     |                                                                                                   |                                                                   |
|--------------------|---------|-----|---------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| Cobalt (7440-48-4) | TLV-TWA | USA | "0.02 mg/m <sup>3</sup> TWA (inhalable particulate matter)" As Cobalt [7440-48-4]                 | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Cobalt (7440-48-4) | TWA     | USA | "0.1 mg/m <sup>3</sup> TWA (dust and fume)" As Cobalt metal [7440-48-4]                           | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)          |
| Cobalt (7440-48-4) | TLV-TWA | USA | 0.02 mg/m <sup>3</sup> TWA (inhalable particulate matter)                                         | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Cobalt (7440-48-4) | TWA     | USA | 0.1 mg/m <sup>3</sup> TWA (dust and fume)                                                         | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)          |
| Cobalt (7440-48-4) | TLV-TWA | USA | 0.02 mg/m <sup>3</sup> TWA (inhalable particulate matter, as Co)                                  | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Copper (7440-50-8) | TLV-TWA | USA | "0.2 mg/m <sup>3</sup> TWA (fume)" As Copper [7440-50-8]                                          | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Copper (7440-50-8) | TWA     | USA | "0.1 mg/m <sup>3</sup> TWA (fume); 1 mg/m <sup>3</sup> TWA (dust and mist)" As Copper [7440-50-8] | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)          |
| Copper (7440-50-8) | TWA     | USA | "0.1 mg/m <sup>3</sup> TWA (fume); 1 mg/m <sup>3</sup> TWA (dust and mist)" As Copper [7440-50-8] | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)          |
| Copper (7440-50-8) | TLV-TWA | USA | "0.2 mg/m <sup>3</sup> TWA (fume)" As Copper [7440-50-8]                                          | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Copper (7440-50-8) | TWA     | USA | "0.1 mg/m <sup>3</sup> TWA (fume); 1 mg/m <sup>3</sup> TWA (dust and mist)" As Copper [7440-50-8] | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)          |
| Copper (7440-50-8) | TLV-TWA | USA | "0.2 mg/m <sup>3</sup> TWA (fume)" As Copper [7440-50-8]                                          | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Copper (7440-50-8) | TLV-TWA | USA | "0.2 mg/m <sup>3</sup> TWA (fume)" As Copper [7440-50-8]                                          | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Copper (7440-50-8) | TWA     | USA | "0.1 mg/m <sup>3</sup> TWA (fume); 1 mg/m <sup>3</sup> TWA (dust and mist)" As Copper [7440-50-8] | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)          |
| Copper (7440-50-8) | TWA     | USA | "0.1 mg/m <sup>3</sup> TWA (fume); 1 mg/m <sup>3</sup> TWA (dust and mist)" As Copper [7440-50-8] | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)          |
| Copper (7440-50-8) | TLV-TWA | USA | "0.2 mg/m <sup>3</sup> TWA (fume)" As Copper [7440-50-8]                                          | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Copper (7440-50-8) | TWA     | USA | 0.1 mg/m <sup>3</sup> TWA (fume); 1 mg/m <sup>3</sup> TWA (dust and mist)                         | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)          |
| Copper (7440-50-8) | TLV-TWA | USA | 0.2 mg/m <sup>3</sup> TWA (fume)                                                                  | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |

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|                              |             |     |                                                                                                                                                                                       |                                                                   |
|------------------------------|-------------|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| Copper (7440-50-8)           | TLV-TWA     | USA | "1 mg/m <sup>3</sup> TWA (dust and mist, as Cu)" As Copper compounds [RR-00595-8]                                                                                                     | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Copper (7440-50-8)           | TLV-TWA     | USA | "1 mg/m <sup>3</sup> TWA (dust and mist, as Cu)" As Copper compounds [RR-00595-8]                                                                                                     | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Vanadium (7440-62-2)         | PEL-Ceiling | USA | "0.5 mg/m <sup>3</sup> Ceiling (respirable dust, as V <sub>2</sub> O <sub>5</sub> ); 0.1 mg/m <sup>3</sup> Ceiling (fume, as V <sub>2</sub> O <sub>5</sub> )" As Vanadium [7440-62-2] | U.S. - OSHA - Final PELs - Ceiling Limits                         |
| Vanadium (7440-62-2)         | PEL-Ceiling | USA | "0.5 mg/m <sup>3</sup> Ceiling (respirable dust, as V <sub>2</sub> O <sub>5</sub> ); 0.1 mg/m <sup>3</sup> Ceiling (fume, as V <sub>2</sub> O <sub>5</sub> )" As Vanadium [7440-62-2] | U.S. - OSHA - Final PELs - Ceiling Limits                         |
| Vanadium (7440-62-2)         | PEL-Ceiling | USA | 0.5 mg/m <sup>3</sup> Ceiling (respirable dust, as V <sub>2</sub> O <sub>5</sub> ); 0.1 mg/m <sup>3</sup> Ceiling (fume, as V <sub>2</sub> O <sub>5</sub> )                           | U.S. - OSHA - Final PELs - Ceiling Limits                         |
| Selenium Dioxide (7446-08-4) | TWA         | USA | "0.2 mg/m <sup>3</sup> TWA (as Se)" As Selenium compounds [RR-00612-2]                                                                                                                | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)          |
| Selenium Dioxide (7446-08-4) | TLV-TWA     | USA | "0.2 mg/m <sup>3</sup> TWA (as Se)" As Selenium compounds [RR-00612-2]                                                                                                                | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Selenium Dioxide (7446-08-4) | TLV-TWA     | USA | "0.2 mg/m <sup>3</sup> TWA (as Se)" As Selenium compounds [RR-00612-2]                                                                                                                | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Selenium Dioxide (7446-08-4) | TWA         | USA | "0.2 mg/m <sup>3</sup> TWA (as Se)" As Selenium compounds [RR-00612-2]                                                                                                                | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)          |
| Selenium Dioxide (7446-08-4) | TLV-TWA     | USA | 0.2 mg/m <sup>3</sup> TWA (as Se)                                                                                                                                                     | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Selenium Dioxide (7446-08-4) | TWA         | USA | 0.2 mg/m <sup>3</sup> TWA (as Se)                                                                                                                                                     | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)          |
| Selenium Dioxide (7446-08-4) | TLV-TWA     | USA | "0.2 mg/m <sup>3</sup> TWA (as Se)" As Selenium compounds [RR-00612-2]                                                                                                                | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |

## Safety Data Sheet

|                               |             |     |                                                                                                                        |                                                                   |
|-------------------------------|-------------|-----|------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| Selenium Dioxide (7446-08-4)  | TWA         | USA | "0.2 mg/m <sup>3</sup> TWA (as Se)" As Selenium compounds [RR-00612-2]                                                 | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)          |
| Hydrofluoric Acid (7664-39-3) | TWA         | USA | "3 ppm TWA (as F)" As Hydrogen fluoride [7664-39-3];<br>"2.5 mg/m <sup>3</sup> TWA (as F)" As Fluorides [RR-02792-9]   | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)          |
| Hydrofluoric Acid (7664-39-3) | TLV-Ceiling | USA | "2 ppm Ceiling (as F)" As Hydrogen fluoride [7664-39-3]                                                                | ACGIH - Threshold Limit Values - Ceilings (TLV-C)                 |
| Hydrofluoric Acid (7664-39-3) | TLV-TWA     | USA | "0.5 ppm TWA (as F)" As Hydrogen fluoride [7664-39-3];<br>"2.5 mg/m <sup>3</sup> TWA (as F)" As Fluorides [RR-02792-9] | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Hydrofluoric Acid (7664-39-3) | TLV-TWA     | USA | "0.5 ppm TWA (as F)" As Hydrogen fluoride [7664-39-3]                                                                  | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Hydrofluoric Acid (7664-39-3) | TWA         | USA | "3 ppm TWA (as F)" As Hydrogen fluoride [7664-39-3]                                                                    | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)          |
| Hydrofluoric Acid (7664-39-3) | TLV-Ceiling | USA | "2 ppm Ceiling (as F)" As Hydrogen fluoride [7664-39-3]                                                                | ACGIH - Threshold Limit Values - Ceilings (TLV-C)                 |
| Hydrofluoric Acid (7664-39-3) | TLV-TWA     | USA | 0.5 ppm TWA (as F)                                                                                                     | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Hydrofluoric Acid (7664-39-3) | TLV-Ceiling | USA | 2 ppm Ceiling (as F)                                                                                                   | ACGIH - Threshold Limit Values - Ceilings (TLV-C)                 |
| Hydrofluoric Acid (7664-39-3) | TWA         | USA | 3 ppm TWA (as F)                                                                                                       | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)          |
| Hydrofluoric Acid (7664-39-3) | TWA         | USA | 2.5 mg/m <sup>3</sup> TWA (as F)                                                                                       | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)          |
| Hydrofluoric Acid (7664-39-3) | TLV-TWA     | USA | 2.5 mg/m <sup>3</sup> TWA (as F)                                                                                       | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Hydrofluoric Acid (7664-39-3) | TLV-Ceiling | USA | "2 ppm Ceiling (as F)" As Hydrogen fluoride [7664-39-3]                                                                | ACGIH - Threshold Limit Values - Ceilings (TLV-C)                 |
| Hydrofluoric Acid (7664-39-3) | TLV-TWA     | USA | "0.5 ppm TWA (as F)" As Hydrogen fluoride [7664-39-3]                                                                  | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |



## Safety Data Sheet

|                               |             |     |                                                                    |                                                                        |
|-------------------------------|-------------|-----|--------------------------------------------------------------------|------------------------------------------------------------------------|
| Hydrofluoric Acid (7664-39-3) | TWA         | USA | "3 ppm TWA (as F)" As Hydrogen fluoride<br>[7664-39-3]             | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)               |
| Hydrofluoric Acid (7664-39-3) | TLV-Ceiling | USA | "2 ppm Ceiling (as F)" As Hydrogen fluoride<br>[7664-39-3]         | ACGIH - Threshold Limit Values - Ceilings (TLV-C)                      |
| Hydrofluoric Acid (7664-39-3) | TLV-TWA     | USA | "0.5 ppm TWA (as F)" As Hydrogen fluoride<br>[7664-39-3]           | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA)      |
| Hydrofluoric Acid (7664-39-3) | TWA         | USA | "3 ppm TWA (as F)" As Hydrogen fluoride<br>[7664-39-3]             | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)               |
| Nitric Acid (7697-37-2)       | TLV-STEL    | USA | "4 ppm STEL" As Nitric acid<br>[7697-37-2]                         | ACGIH - Threshold Limit Values - Short Term Exposure Limits (TLV-STEL) |
| Nitric Acid (7697-37-2)       | TLV-TWA     | USA | "2 ppm TWA" As Nitric acid<br>[7697-37-2]                          | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA)      |
| Nitric Acid (7697-37-2)       | TWA         | USA | "2 ppm TWA; 5 mg/m <sup>3</sup> TWA" As Nitric acid<br>[7697-37-2] | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)               |
| Nitric Acid (7697-37-2)       | TLV-TWA     | USA | "2 ppm TWA" As Nitric acid<br>[7697-37-2]                          | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA)      |
| Nitric Acid (7697-37-2)       | TWA         | USA | "2 ppm TWA; 5 mg/m <sup>3</sup> TWA" As Nitric acid<br>[7697-37-2] | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)               |
| Nitric Acid (7697-37-2)       | TLV-STEL    | USA | "4 ppm STEL" As Nitric acid<br>[7697-37-2]                         | ACGIH - Threshold Limit Values - Short Term Exposure Limits (TLV-STEL) |
| Nitric Acid (7697-37-2)       | TLV-STEL    | USA | 4 ppm STEL                                                         | ACGIH - Threshold Limit Values - Short Term Exposure Limits (TLV-STEL) |
| Nitric Acid (7697-37-2)       | TLV-TWA     | USA | 2 ppm TWA                                                          | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA)      |
| Nitric Acid (7697-37-2)       | TWA         | USA | 2 ppm TWA; 5 mg/m <sup>3</sup> TWA                                 | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)               |
| Nitric Acid (7697-37-2)       | TWA         | USA | "2 ppm TWA; 5 mg/m <sup>3</sup> TWA" As Nitric acid<br>[7697-37-2] | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)               |
| Nitric Acid (7697-37-2)       | TLV-TWA     | USA | "2 ppm TWA" As Nitric acid<br>[7697-37-2]                          | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA)      |
| Nitric Acid (7697-37-2)       | TLV-STEL    | USA | "4 ppm STEL" As Nitric acid<br>[7697-37-2]                         | ACGIH - Threshold Limit Values - Short Term Exposure Limits (TLV-STEL) |



## Safety Data Sheet

|                                              |          |     |                                                                             |                                                                        |
|----------------------------------------------|----------|-----|-----------------------------------------------------------------------------|------------------------------------------------------------------------|
| Nitric Acid (7697-37-2)                      | TWA      | USA | "2 ppm TWA; 5 mg/m <sup>3</sup> TWA" As Nitric acid [7697-37-2]             | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)               |
| Nitric Acid (7697-37-2)                      | TLV-STEL | USA | "4 ppm STEL" As Nitric acid [7697-37-2]                                     | ACGIH - Threshold Limit Values - Short Term Exposure Limits (TLV-STEL) |
| Nitric Acid (7697-37-2)                      | TLV-TWA  | USA | "2 ppm TWA" As Nitric acid [7697-37-2]                                      | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA)      |
| Nitric Acid (7697-37-2)                      | TWA      | USA | "2 ppm TWA; 5 mg/m <sup>3</sup> TWA" As Nitric acid [7697-37-2]             | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)               |
| Nitric Acid (7697-37-2)                      | TLV-TWA  | USA | "2 ppm TWA" As Nitric acid [7697-37-2]                                      | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA)      |
| Nitric Acid (7697-37-2)                      | TLV-STEL | USA | "4 ppm STEL" As Nitric acid [7697-37-2]                                     | ACGIH - Threshold Limit Values - Short Term Exposure Limits (TLV-STEL) |
| Nitric Acid (7697-37-2)                      | TLV-TWA  | USA | "2 ppm TWA" As Nitric acid [7697-37-2]                                      | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA)      |
| Nitric Acid (7697-37-2)                      | TLV-STEL | USA | "4 ppm STEL" As Nitric acid [7697-37-2]                                     | ACGIH - Threshold Limit Values - Short Term Exposure Limits (TLV-STEL) |
| Nitric Acid (7697-37-2)                      | TWA      | USA | "2 ppm TWA; 5 mg/m <sup>3</sup> TWA" As Nitric acid [7697-37-2]             | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)               |
| Chromium Nitrate Nonahydrate (7789-12-7) TWA |          | USA | "0.5 mg/m <sup>3</sup> TWA (as Cr)" As Chromium(III) compounds [RR-03889-1] | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)               |
| Chromium Nitrate Nonahydrate (7789-12-7) TWA |          | USA | "0.5 mg/m <sup>3</sup> TWA (as Cr)" As Chromium(III) compounds [RR-03889-1] | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)               |
| Chromium Nitrate Nonahydrate (7789-12-7) TWA |          | USA | 0.5 mg/m <sup>3</sup> TWA (as Cr)                                           | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)               |
| Chromium Nitrate Nonahydrate (7789-12-7) TWA |          | USA | "0.5 mg/m <sup>3</sup> TWA (as Cr)" As Chromium(III) compounds [RR-03889-1] | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)               |
| Chromium Nitrate Nonahydrate (7789-12-7) TWA |          | USA | "0.5 mg/m <sup>3</sup> TWA (as Cr)" As Chromium(III) compounds [RR-03889-1] | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)               |

### 8.2. Exposure Controls

**Engineering Controls:** No specific controls are needed. Normal room ventilation is adequate.

**Respiratory Protection:** Normal room ventilation is adequate.

**Skin Protection:** Wear protective gloves and eye protection. Chemical resistant gloves.

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**Eye Protection:** Wear protective gloves and eye protection. Safety glasses or goggles.

### 8.3. Personal Protective Equipment

Wear protective gloves and eye protection. Normal room ventilation is adequate. Chemical resistant gloves. Safety glasses or goggles.

## SECTION 9: Physical and Chemical Properties

### 9.1. Basic Physical and Chemical Properties

**Appearance:** Light colored liquid

**Physical State:** Liquid

**Odor:** Data not available.

**Odor Threshold:** Data not available.

**pH:** Acidic

**Melting/Freezing Point:** Data not available.

**Initial Boiling Point/Range:** Approximately 100°C - Approximately 100°C

**Flash Point:** Data not available.

**Evaporation Rate:** Data not available.

**Flammability:** Data not available.

**Flammability/Explosive Limits:** Data not available.

**Vapor Pressure:** Data not available.

**Vapor Density:** Data not available.

**Relative Density:** 1.03

**Solubility:** Miscible

**Partition Coefficient:** Data not available.

**Auto-Ignition Temperature:** Data not available.

**Decomposition Temperature:** Data not available.

**Viscosity:** Data not available.

**Explosive Properties:** Data not available.

**Oxidizing Properties:** Data not available.

## SECTION 10: Stability and Reactivity

### 10.1. Reactivity and Chemical Stability

Stable under normal conditions of use and storage.

### 10.2. Possibility of Hazardous Reactions

Data not available.

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### 10.3. Conditions to Avoid and Incompatible Materials

Keep only in original container. Strong bases, metallic powders.

### 10.4. Hazardous Decomposition Products

Will not occur.

## SECTION 11: Toxicological Information

### 11.1. Information on Toxicological Effects

#### Acute Toxicity - Oral Exposure:

Not applicable.

#### Acute Toxicity - Dermal Exposure:

Not applicable.

#### Acute Toxicity - Inhalation Exposure:

Not applicable.

#### Acute Toxicity - Other Information:

LDLo, Oral, Human: 430 mg/kg (Nitric Acid), details of toxic effects not reported other than lethal dose value.

#### Skin Corrosion and Irritation:

Causes severe skin burns and eye damage. Do not breathe fumes, mist, vapors, or spray. Wash arms, hands and face thoroughly after handling. Wear protective gloves and eye protection. IF SWALLOWED: rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. Wash contaminated clothing before reuse. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or physician. Specific treatment (Wash areas of contact with water.). IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Store locked up. Dispose of contents in accordance with local, state, federal and international regulations.

#### Serious Eye Damage and Irritation:

Causes serious eye damage. Wear protective gloves and eye protection. 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 or physician.

#### Respiratory Sensitization:

Not applicable.

#### Skin Sensitization:

Not applicable.

#### Germ Cell Mutagenicity:

Not applicable.

#### Carcinogenicity:

Not applicable.

#### Reproductive Toxicity:

Not applicable.

#### Specific Target Organ Toxicity from Single Exposure:

Not applicable.

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**Specific Target Organ Toxicity from Repeated Exposure:**

Not applicable.

**Aspiration Hazard:**

Not applicable.

**Additional Toxicology Information:**

Data not available.

### SECTION 12: Ecological Information

**12.1. Ecotoxicity**

Not applicable.

**12.2. Persistence and Degradability**

Data not available.

**12.3. Bioaccumulative Potential**

Data not available.

**12.4. Mobility in Soil**

Data not available.

**12.5. Other Adverse Ecological Effects**

Data not available.

### SECTION 13: Disposal Considerations

**13.1. Waste Treatment Methods**

Data not available.

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### SECTION 14: Transportation Information

#### 14.1. Transportation by Land-Department of Transportation (DOT, United States of America)

**Sizes:** 100 mL

**UN Number:** UN3264

**Proper Shipping Name:** Corrosive Liquid, Acidic, Inorganic, n.o.s. (Nitric Acid)

**Hazard Class:** 8

**Packing Group:** III

**Hazard Label(s):**



#### 14.2. Transportation by Air - International Air Transport Association (IATA)

**Sizes:** 100 mL

**UN Number:** UN3264

**Proper Shipping Name:** Corrosive Liquid, Acidic, Inorganic, n.o.s. (Nitric Acid)

**Hazard Class:** 8

**Packing Group:** III

**Hazard Label(s):**



#### 14.3 Transportation of Dangerous Goods (TDG, Canada)

**Sizes:** 100 mL

**UN Number:** UN3264

**Proper Shipping Name:** CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (nitric acid)

**Hazard Class:** 8

**Packing Group:** III

**Hazard Label(s):**



## Safety Data Sheet

### SECTION 15: Regulatory Information

#### 15.1. Occupational Safety and Health Administration (OSHA) Hazards

Lead (CAS # 7439-92-1): "30 µg/m<sup>3</sup> Action Level (See 29 CFR 1910.1025); 50 µg/m<sup>3</sup> TWA (See 29 CFR 1910.1025)" As Lead [7439-92-1]

Lead (CAS # 7439-92-1): "30 µg/m<sup>3</sup> Action Level (See 29 CFR 1910.1025, as Pb); 50 µg/m<sup>3</sup> TWA (See 29 CFR 1910.1025, as Pb)" As Lead, inorganic compounds [RR-00538-9]

Lead (CAS # 7439-92-1): 30 µg/m<sup>3</sup> Action Level (See 29 CFR 1910.1025); 50 µg/m<sup>3</sup> TWA (See 29 CFR 1910.1025)

Arsenic (CAS # 7440-38-2): "10 µg/m<sup>3</sup> TWA (See 29 CFR 1910.1018, except Arsine, as As); 5 µg/m<sup>3</sup> Action Level (See 29 CFR 1910.1018, except Arsine, as As)" As Inorganic arsenic compounds [RR-00065-7]

Beryllium (CAS # 7440-41-7): "0.2 µg/m<sup>3</sup> TWA (See 29 CFR 1910.1024); 0.1 µg/m<sup>3</sup> Action Level (See 29 CFR 1910.1024); 2.0 µg/m<sup>3</sup> STEL (See 29 CFR 1910.1024, 15 min)" As Beryllium [7440-41-7]

Beryllium (CAS # 7440-41-7): 0.2 µg/m<sup>3</sup> TWA (See 29 CFR 1910.1024); 0.1 µg/m<sup>3</sup> Action Level (See 29 CFR 1910.1024); 2.0 µg/m<sup>3</sup> STEL (See 29 CFR 1910.1024, 15 min)

Cadmium (CAS # 7440-43-9): "5 µg/m<sup>3</sup> TWA (See 29 CFR 1910.1027, as Cd); 2.5 µg/m<sup>3</sup> Action Level (as Cd)" As Cadmium compounds [RR-00559-4]

Cadmium (CAS # 7440-43-9): 5 µg/m<sup>3</sup> TWA (See 29 CFR 1910.1027); 2.5 µg/m<sup>3</sup> Action Level

#### 15.2. Superfund Amendments and Reauthorization Act (SARA) 302 Extremely Hazardous Substances

Hydrofluoric Acid (CAS # 7664-39-3): "100 lb EPCRA RQ" As Hydrogen fluoride [7664-39-3]

Hydrofluoric Acid (CAS # 7664-39-3): "100 lb TPQ" As Hydrogen fluoride [7664-39-3]

Hydrofluoric Acid (CAS # 7664-39-3): 100 lb EPCRA RQ

Hydrofluoric Acid (CAS # 7664-39-3): 100 lb TPQ

Nitric Acid (CAS # 7697-37-2): "1000 lb EPCRA RQ" As Nitric acid [7697-37-2]

Nitric Acid (CAS # 7697-37-2): "1000 lb TPQ" As Nitric acid [7697-37-2]

Nitric Acid (CAS # 7697-37-2): 1000 lb EPCRA RQ

Nitric Acid (CAS # 7697-37-2): 1000 lb TPQ



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### 15.3. Superfund Amendments and Reauthorization Act (SARA) 311/312 Hazardous Chemicals

Lead (CAS # 7439-92-1): "10 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is  $>100\text{ }\mu\text{m}$ ); 4.54 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is  $>100\text{ }\mu\text{m}$ )" As Lead [7439-92-1]

Lead (CAS # 7439-92-1): 10 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is  $>100\text{ }\mu\text{m}$ ); 4.54 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is  $>100\text{ }\mu\text{m}$ )

Mercury (CAS # 7439-97-6): "1 lb final RQ; 0.454 kg final RQ" As Mercury [7439-97-6]

Mercury (CAS # 7439-97-6): 1 lb final RQ; 0.454 kg final RQ

Nickel (CAS # 7440-02-0): "100 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is  $>100\text{ }\mu\text{m}$ ); 45.4 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is  $>100\text{ }\mu\text{m}$ )" As Nickel [7440-02-0]

Nickel (CAS # 7440-02-0): 100 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is  $>100\text{ }\mu\text{m}$ ); 45.4 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is  $>100\text{ }\mu\text{m}$ )

Arsenic (CAS # 7440-38-2): "1 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is  $>100\text{ }\mu\text{m}$ ); 0.454 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is  $>100\text{ }\mu\text{m}$ )" As Arsenic [7440-38-2]

Arsenic (CAS # 7440-38-2): 1 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the



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### 15.4. Superfund Amendments and Reauthorization Act (SARA) 313 Toxic Release Inventory (TRI)

Lead (CAS # 7439-92-1): "100 lb RT (this lower threshold does not apply to lead when it is contained in stainless steel, brass or bronze alloy)" As Lead [7439-92-1]

Lead (CAS # 7439-92-1): "100 lb RT" As Lead compounds [RR-00630-4]

Lead (CAS # 7439-92-1): "not eligible for the de minimis exemption" As Lead [7439-92-1]

Lead (CAS # 7439-92-1): "not eligible for the de minimis exemption, listed under Chemical Category N420" As Inorganic lead compounds [RR-00538-1]  
"not eligible for the de minimis exemption" As Lead compounds [RR-00630-4]

Lead (CAS # 7439-92-1): 100 lb RT (this lower threshold does not apply to lead when it is contained in stainless steel, brass or bronze alloy)

Lead (CAS # 7439-92-1): not eligible for the de minimis exemption

Manganese (CAS # 7439-96-5): "1.0 % de minimis concentration (includes any unique chemical substance that contains Manganese as part of that chemical's infrastructure, listed under Chemical Category N450)" As Manganese compounds [RR-00602-0]

Manganese (CAS # 7439-96-5): "1.0 % de minimis concentration" As Manganese [7439-96-5]

Manganese (CAS # 7439-96-5): 1.0 % de minimis concentration

Mercury (CAS # 7439-97-6): "10 lb RT" As Mercury [7439-97-6]

Mercury (CAS # 7439-97-6): "10 lb RT" As Mercury compounds [RR-00138-7]

Mercury (CAS # 7439-97-6): "not eligible for the de minimis exemption" As Mercury [7439-97-6]

Mercury (CAS # 7439-97-6): "not eligible for the de minimis exemption, listed under Chemical Category N458" As Mercury compounds [RR-00138-7]

Mercury (CAS # 7439-97-6): 10 lb RT

Mercury (CAS # 7439-97-6): not eligible for the de minimis exemption

Nickel (CAS # 7440-02-0): "0.1 % de minimis concentration (includes any unique chemical substance that contains Nickel as part of that chemical's infrastructure, listed under Chemical Category N495)" As Nickel compounds [RR-00800-4]

Nickel (CAS # 7440-02-0): "0.1 % de minimis concentration" As Nickel [7440-02-0]

Nickel (CAS # 7440-02-0): 0.1 % de minimis concentration

Arsenic (CAS #

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### 15.5. Massachusetts Right-to-Know Substance List

Lead (CAS # 7439-92-1): "Teratogen" As Lead [7439-92-1]  
Lead (CAS # 7439-92-1): Teratogen  
Manganese (CAS # 7439-96-5): "Present" As Manganese [7439-96-5]  
Manganese (CAS # 7439-96-5): Present  
Mercury (CAS # 7439-97-6): "Present" As Mercury [7439-97-6]  
Mercury (CAS # 7439-97-6): Present  
Nickel (CAS # 7440-02-0): "Carcinogen; Extraordinarily hazardous" As Nickel [7440-02-0]  
Nickel (CAS # 7440-02-0): Carcinogen; Extraordinarily hazardous  
Arsenic (CAS # 7440-38-2): "Carcinogen; Extraordinarily hazardous" As Arsenic [7440-38-2]  
Arsenic (CAS # 7440-38-2): Carcinogen; Extraordinarily hazardous  
Beryllium (CAS # 7440-41-7): "Carcinogen; Extraordinarily hazardous" As Beryllium [7440-41-7]  
Beryllium (CAS # 7440-41-7): Carcinogen; Extraordinarily hazardous  
Cadmium (CAS # 7440-43-9): Carcinogen; Extraordinarily hazardous  
Cobalt (CAS # 7440-48-4): "Present" As Cobalt [7440-48-4]  
Cobalt (CAS # 7440-48-4): Present  
Copper (CAS # 7440-50-8): "Present" As Copper [7440-50-8]  
Copper (CAS # 7440-50-8): Present  
Vanadium (CAS # 7440-62-2): "Present (dust and fume)" As Vanadium [7440-62-2]  
Vanadium (CAS # 7440-62-2): Present (dust and fume)  
Zinc (CAS # 7440-66-6): "Present" As Zinc [7440-66-6]  
Zinc (CAS # 7440-66-6): Present  
Selenium Dioxide (CAS # 7446-08-4): "Present" As Selenium dioxide [7446-08-4]  
Selenium Dioxide (CAS # 7446-08-4): Present  
Hydrofluoric Acid (CAS # 7664-39-3): "Extraordinarily hazardous" As Hydrofluoric acid [7664-39-3]  
Hydrofluoric Acid (CAS # 7664-39-3): Extraordinarily hazardous  
Nitric Acid (CAS # 7697-37-2): "Extraordinarily hazardous" As Nitric acid [7697-37-2]  
Nitric Acid (CAS # 7697-37-2): Extraordinarily hazardous



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### 15.6. Pennsylvania Right-to-Know Hazardous Substances

Lead (CAS # 7439-92-1): "Environmental hazard" As Lead [7439-92-1]  
Lead (CAS # 7439-92-1): "Environmental hazard" As Lead compounds [RR-00630-4]  
Lead (CAS # 7439-92-1): "Present" As Lead [7439-92-1]  
Lead (CAS # 7439-92-1): "Present" As Lead compounds [RR-00630-4]  
Lead (CAS # 7439-92-1): Environmental hazard  
Lead (CAS # 7439-92-1): Present  
Manganese (CAS # 7439-96-5): "Environmental hazard" As Manganese [7439-96-5]  
Manganese (CAS # 7439-96-5): "Environmental hazard" As Manganese compounds [RR-00602-0]  
Manganese (CAS # 7439-96-5): "Present" As Manganese [7439-96-5]  
Manganese (CAS # 7439-96-5): "Present" As Manganese compounds [RR-00602-0]  
Manganese (CAS # 7439-96-5): Environmental hazard  
Manganese (CAS # 7439-96-5): Present  
Mercury (CAS # 7439-97-6): "Environmental hazard" As Mercury [7439-97-6]  
Mercury (CAS # 7439-97-6): "Present" As Mercury [7439-97-6]  
Mercury (CAS # 7439-97-6): Environmental hazard  
Mercury (CAS # 7439-97-6): Present  
Nickel (CAS # 7440-02-0): "Environmental hazard" As Nickel compounds [RR-00800-4]  
Nickel (CAS # 7440-02-0): "Environmental hazard; Special hazardous substance" As Nickel [7440-02-0]  
Nickel (CAS # 7440-02-0): "Present" As Nickel [7440-02-0]  
Nickel (CAS # 7440-02-0): "Present" As Nickel compounds [RR-00800-4]  
Nickel (CAS # 7440-02-0): Environmental hazard  
Nickel (CAS # 7440-02-0): Environmental hazard; Special hazardous substance  
Nickel (CAS # 7440-02-0): Present  
Arsenic (CAS # 7440-38-2): "Environmental hazard (including inorganic); Special hazardous substance" As Arsenic [7440-38-2]  
Arsenic (CAS # 7440-38-2): "Environmental hazard" As Arsenic compounds [RR-00625-7]  
Arsenic (CAS # 7440-38-2): "Present (including inorganic)" As Arsenic [7440-38-2]  
Arsenic (CAS # 7440-38-2): "Present" As Arsenic [7440-38-2]  
Arsenic (CAS # 7440-38-2): "Present" As Arsenic compounds [RR-00625-7]  
Arsenic (CAS # 7440-38-2): Environmental hazard (including inorganic); Special hazardous substance  
Arsenic (CAS # 7440-38-2): Present  
Arsenic (CAS # 7440-38-2): Pres



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### 15.7. New Jersey Worker and Community Right-to-Know Components

Lead (CAS # 7439-92-1): "carcinogen" As Lead compounds [RR-00630-4]

Lead (CAS # 7439-92-1): "carcinogen; teratogen" As Lead [7439-92-1]

Lead (CAS # 7439-92-1): "SN 1096 500 lb TPQ" As Lead [7439-92-1]

Lead (CAS # 7439-92-1): "sn 1096" As Lead [7439-92-1]

Lead (CAS # 7439-92-1): "SN 2266 500 lb TPQ (Category Code N420. Includes any unique chemical substance that contains the named metal as part of that chemical structure)" As Lead compounds [RR-00630-4]

Lead (CAS # 7439-92-1): "sn 2266" As Lead compounds [RR-00630-4]

Lead (CAS # 7439-92-1): carcinogen; teratogen

Lead (CAS # 7439-92-1): sn 1096

Lead (CAS # 7439-92-1): SN 1096 500 lb TPQ

Manganese (CAS # 7439-96-5): "flammable - third degree" As Manganese [7439-96-5]

Manganese (CAS # 7439-96-5): "SN 1155 500 lb TPQ" As Manganese [7439-96-5]

Manganese (CAS # 7439-96-5): "sn 1155" As Manganese [7439-96-5]

Manganese (CAS # 7439-96-5): "SN 2324 500 lb TPQ (Category Code N450. Includes any unique chemical substance that contains the named metal as part of that chemical structure)" As Manganese compounds [RR-00602-0]

Manganese (CAS # 7439-96-5): "sn 2324" As Manganese compounds [RR-00602-0]

Manganese (CAS # 7439-96-5): flammable - third degree

Manganese (CAS # 7439-96-5): sn 1155

Manganese (CAS # 7439-96-5): SN 1155 500 lb TPQ

Mercury (CAS # 7439-97-6): "corrosive" As Mercury [7439-97-6]

Mercury (CAS # 7439-97-6): "SN 1183 500 lb TPQ" As Mercury [7439-97-6]

Mercury (CAS # 7439-97-6): "sn 1183" As Mercury, elemental [7439-97-6]

Mercury (CAS # 7439-97-6): "SN 2414 500 lb TPQ (Category Code N458. Includes any unique chemical substance that contains the named metal as part of that chemical structure)" As Mercury compounds [RR-00138-7]

Mercury (CAS # 7439-97-6): corrosive

Mercury (CAS # 7439-97-6): sn 1183

Mercury (CAS # 7439-97-6): SN 1183 500 lb TPQ

Nickel (CAS # 7440-02-0): "carcinogen" As Nickel [7440-02-0]

Nickel (CAS # 7440-02-0): "carcinogen" As Nickel compounds [RR-00800-4]

Nickel (CAS # 7440-02-0): "SN 1341 500 lb TPQ" A



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### 15.8. California Proposition 65

Lead (CAS # 7439-92-1): "15 µg/day NSRL (oral)" As Lead [7439-92-1]  
Lead (CAS # 7439-92-1): "carcinogen, 10/1/1992" As Lead [7439-92-1]  
Lead (CAS # 7439-92-1): "carcinogen, 10/1/1992" As Lead compounds [RR-00630-4]  
Lead (CAS # 7439-92-1): "developmental toxicity, 2/27/1987" As Lead [7439-92-1]  
Lead (CAS # 7439-92-1): "female reproductive toxicity 2/27/87" As Lead [7439-92-1]  
Lead (CAS # 7439-92-1): "male reproductive toxicity, 2/27/87" As Lead [7439-92-1]  
Lead (CAS # 7439-92-1): 15 µg/day NSRL (oral)  
Lead (CAS # 7439-92-1): carcinogen, 10/1/1992  
Lead (CAS # 7439-92-1): developmental toxicity, 2/27/1987  
Lead (CAS # 7439-92-1): female reproductive toxicity 2/27/87  
Lead (CAS # 7439-92-1): male reproductive toxicity, 2/27/87  
Mercury (CAS # 7439-97-6): "developmental toxicity, 7/1/1990" As Mercury [7439-97-6]  
Mercury (CAS # 7439-97-6): "developmental toxicity, 7/1/1990" As Mercury compounds [RR-00138-7]  
Mercury (CAS # 7439-97-6): developmental toxicity, 7/1/1990  
Nickel (CAS # 7440-02-0): "carcinogen, 10/1/1989 (metallic)" As Nickel [7440-02-0]  
Nickel (CAS # 7440-02-0): "carcinogen, 5/7/2004" As Nickel compounds [RR-00800-4]  
Nickel (CAS # 7440-02-0): carcinogen, 10/1/1989 (metallic)  
Arsenic (CAS # 7440-38-2): "0.06 µg/day NSRL (inhalation); 10 µg/day NSRL (except inhalation)" As Arsenic [7440-38-2]  
Arsenic (CAS # 7440-38-2): "0.06 µg/day NSRL (inhalation, listed under Arsenic); 10 µg/day NSRL (except inhalation, listed under Arsenic)" As Arsenic inorganic compounds [RR-00065-7]  
Arsenic (CAS # 7440-38-2): "carcinogen, 2/27/1987" As Arsenic, inorganic compounds [RR-00065-7]  
Arsenic (CAS # 7440-38-2): 0.06 µg/day NSRL (inhalation); 10 µg/day NSRL (except inhalation)  
Beryllium (CAS # 7440-41-7): "0.1 µg/day NSRL" As Beryllium [7440-41-7]  
Beryllium (CAS # 7440-41-7): "carcinogen, 10/1/1987" As Beryllium [7440-41-7]  
Beryllium (CAS # 7440-41-7): "carcinogen, 10/1/1987" As Beryllium compounds [RR-00557-2]  
Beryllium (CAS # 7440-41-7): 0.1 µg/day NSRL  
Beryllium (CAS # 7440-41-7):



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### 15.9. Canada Domestic Substances List / Non-Domestic Substances List (DSL/NDSL)

Iron (CAS # 7439-89-6): "Present" As Iron [7439-89-6] (DSL)  
Iron (CAS # 7439-89-6): Present (DSL)  
Lead (CAS # 7439-92-1): "Present" As Lead [7439-92-1] (DSL)  
Lead (CAS # 7439-92-1): Present (DSL)  
Manganese (CAS # 7439-96-5): "Present" As Manganese [7439-96-5] (DSL)  
Manganese (CAS # 7439-96-5): Present (DSL)  
Mercury (CAS # 7439-97-6): "Present" As Mercury [7439-97-6] (DSL)  
Mercury (CAS # 7439-97-6): Present (DSL)  
Nickel (CAS # 7440-02-0): "Present" As Nickel [7440-02-0] (DSL)  
Nickel (CAS # 7440-02-0): Present (DSL)  
Arsenic (CAS # 7440-38-2): "Present" As Arsenic [7440-38-2] (DSL)  
Arsenic (CAS # 7440-38-2): Present (DSL)  
Beryllium (CAS # 7440-41-7): "Present" As Beryllium [7440-41-7] (DSL)  
Beryllium (CAS # 7440-41-7): Present (DSL)  
Cadmium (CAS # 7440-43-9): Present (DSL)  
Cobalt (CAS # 7440-48-4): "Present" As Cobalt [7440-48-4] (DSL)  
Cobalt (CAS # 7440-48-4): Present (DSL)  
Copper (CAS # 7440-50-8): "Present" As Copper [7440-50-8] (DSL)  
Copper (CAS # 7440-50-8): Present (DSL)  
Vanadium (CAS # 7440-62-2): "Present" As Vanadium [7440-62-2] (DSL)  
Vanadium (CAS # 7440-62-2): Present (DSL)  
Zinc (CAS # 7440-66-6): "Present" As Zinc [7440-66-6] (DSL)  
Zinc (CAS # 7440-66-6): Present (DSL)  
Selenium Dioxide (CAS # 7446-08-4): "Present" As Selenium dioxide [7446-08-4] (DSL)  
Selenium Dioxide (CAS # 7446-08-4): "Present" As Selenium oxide [12640-89-0] (NDSL)  
Selenium Dioxide (CAS # 7446-08-4): Present (DSL)  
Selenium Dioxide (CAS # 7446-08-4): Present (NDSL)  
Hydrofluoric Acid (CAS # 7664-39-3): "Present" As Hydrogen fluoride [7664-39-3] (DSL)  
Hydrofluoric Acid (CAS # 7664-39-3): Present (DSL)  
Nitric Acid (CAS # 7697-37-2): "Present" As Nitric acid [7697-37-2] (DSL)  
Nitric Acid (CAS # 7697-37-2): Present (DSL)  
Water (CAS # 7732-18-5): "Present" As Water [7732-18-5] (DSL)  
Water (CAS # 7732-18-5): Present (DSL)  
Aluminum Nitrate Nonahydrate (CAS # 7784-27-2): "Present" As Aluminum nitrate [13473-90-0] (DSL)  
Aluminum Nitrate Nonahydrate (CAS # 7784-27-2): Present (DSL)  
Chromium Nitrate N



## Safety Data Sheet

### 15.10. United States of America Toxic Substances Control Act (TSCA) List

All components of this solution are listed as active on the TSCA Inventory or are mixtures (hydrates) of active items listed on the TSCA Inventory.

Iron (CAS # 7439-89-6): "Present (ACTIVE)" As Iron [7439-89-6]  
Iron (CAS # 7439-89-6): Present (ACTIVE)  
Lead (CAS # 7439-92-1): "Present (ACTIVE)" As Lead [7439-92-1]  
Lead (CAS # 7439-92-1): Present (ACTIVE)  
Manganese (CAS # 7439-96-5): "Present (ACTIVE)" As Manganese [7439-96-5]  
Manganese (CAS # 7439-96-5): Present (ACTIVE)  
Mercury (CAS # 7439-97-6): "Present [S; 12C] (ACTIVE)" As Mercury [7439-97-6]  
Mercury (CAS # 7439-97-6): Present [S; 12C] (ACTIVE)  
Nickel (CAS # 7440-02-0): "Present (ACTIVE)" As Nickel [7440-02-0]  
Nickel (CAS # 7440-02-0): Present (ACTIVE)  
Arsenic (CAS # 7440-38-2): "Present (ACTIVE)" As Arsenic [7440-38-2]  
Arsenic (CAS # 7440-38-2): Present (ACTIVE)  
Beryllium (CAS # 7440-41-7): "Present (ACTIVE)" As Beryllium [7440-41-7]  
Beryllium (CAS # 7440-41-7): Present (ACTIVE)  
Cadmium (CAS # 7440-43-9): Present (ACTIVE)  
Cobalt (CAS # 7440-48-4): "Present (ACTIVE)" As Cobalt [7440-48-4]  
Cobalt (CAS # 7440-48-4): Present (ACTIVE)  
Copper (CAS # 7440-50-8): "Present (ACTIVE)" As Copper [7440-50-8]  
Copper (CAS # 7440-50-8): Present (ACTIVE)  
Vanadium (CAS # 7440-62-2): "Present (ACTIVE)" As Vanadium [7440-62-2]  
Vanadium (CAS # 7440-62-2): Present (ACTIVE)  
Zinc (CAS # 7440-66-6): "Present (ACTIVE)" As Zinc [7440-66-6]  
Zinc (CAS # 7440-66-6): Present (ACTIVE)  
Selenium Dioxide (CAS # 7446-08-4): "Present (ACTIVE)" As Selenium oxide (SeO<sub>2</sub>) [7446-08-4]  
Selenium Dioxide (CAS # 7446-08-4): Present (ACTIVE)  
Hydrofluoric Acid (CAS # 7664-39-3): "Present (ACTIVE)" As Hydrofluoric acid [7664-39-3]  
Hydrofluoric Acid (CAS # 7664-39-3): Present (ACTIVE)  
Nitric Acid (CAS # 7697-37-2): "Present (ACTIVE)" As Nitric acid [7697-37-2]  
Nitric Acid (CAS # 7697-37-2): Present (ACTIVE)  
Water (CAS # 7732-18-5): "Present (ACTIVE)" As Water [7732-18-5]  
Water (CAS # 7732-18-5): Present (ACTIVE)  
Aluminum Nitrate Nonahydrate (CAS # 7784-27-2): "Present (ACTIVE)" As Nitric acid, aluminum salt (3:1) [13473-90-0]  
Aluminum Nitrate Nonahydrate (CAS # 7784-27-2): Present (ACTIVE)  
Chromium Nitrat





## Safety Data Sheet

### 15.11. European Inventory of Existing Commercial Chemical Substances (EINECS), European List of Notified Chemical Substances (ELINCS), and No Longer Polymers (NLP)

Iron (CAS # 7439-89-6): "231-096-4" As Iron [7439-89-6]  
Iron (CAS # 7439-89-6): 231-096-4  
Lead (CAS # 7439-92-1): "231-100-4" As Lead [7439-92-1]  
Lead (CAS # 7439-92-1): 231-100-4  
Manganese (CAS # 7439-96-5): "231-105-1" As Manganese [7439-96-5]  
Manganese (CAS # 7439-96-5): 231-105-1  
Mercury (CAS # 7439-97-6): "231-106-7" As Mercury [7439-97-6]  
Mercury (CAS # 7439-97-6): 231-106-7  
Nickel (CAS # 7440-02-0): "231-111-4" As Nickel [7440-02-0]  
Nickel (CAS # 7440-02-0): 231-111-4  
Arsenic (CAS # 7440-38-2): "231-148-6" As Arsenic [7440-38-2]  
Arsenic (CAS # 7440-38-2): 231-148-6  
Beryllium (CAS # 7440-41-7): "231-150-7" As Beryllium [7440-41-7]  
Beryllium (CAS # 7440-41-7): 231-150-7  
Cadmium (CAS # 7440-43-9): 231-152-8  
Cobalt (CAS # 7440-48-4): "231-158-0" As Cobalt [7440-48-4]  
Cobalt (CAS # 7440-48-4): 231-158-0  
Copper (CAS # 7440-50-8): "231-159-6" As Copper [7440-50-8]  
Copper (CAS # 7440-50-8): 231-159-6  
Vanadium (CAS # 7440-62-2): "231-171-1" As Vanadium [7440-62-2]  
Vanadium (CAS # 7440-62-2): 231-171-1  
Zinc (CAS # 7440-66-6): "231-175-3" As Zinc [7440-66-6]  
Zinc (CAS # 7440-66-6): 231-175-3  
Selenium Dioxide (CAS # 7446-08-4): "231-194-7" As Selenium dioxide [7446-08-4]  
Selenium Dioxide (CAS # 7446-08-4): 231-194-7  
Selenium Dioxide (CAS # 7446-08-4): 235-738-4  
Hydrofluoric Acid (CAS # 7664-39-3): "231-634-8" As Hydrogen fluoride [7664-39-3]  
Hydrofluoric Acid (CAS # 7664-39-3): 231-634-8  
Nitric Acid (CAS # 7697-37-2): "231-714-2" As Nitric acid [7697-37-2]  
Nitric Acid (CAS # 7697-37-2): 231-714-2  
Water (CAS # 7732-18-5): "231-791-2" As Water [7732-18-5]  
Water (CAS # 7732-18-5): 231-791-2  
Aluminum Nitrate Nonahydrate (CAS # 7784-27-2): "236-751-8" As Aluminium nitrate [13473-90-0]  
Aluminum Nitrate Nonahydrate (CAS # 7784-27-2): 236-751-8  
Chromium Nitrate Nonahydrate (CAS # 7789-02-8): "236-921-1" As Chromium trinitrate [13548-38-4]  
Chromium Nitrate Nonahydrate (CAS # 7789-02-8): 236-921-1

## Safety Data Sheet

### SECTION 16: Other Information

#### 16.1. Full Text of Hazard Statements and Precautionary Statements

May be corrosive to metals. Causes severe skin burns and eye damage.

Keep only in original container. Do not breathe fumes, mist, vapors, or spray. Wash arms, hands and face thoroughly after handling. Wear protective gloves and eye protection.

IF SWALLOWED: rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with 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. Immediately call a POISON CENTER or physician. Specific treatment (Wash areas of contact with water.). 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 in accordance with local, state, federal and international regulations.

#### 16.2. Miscellaneous Hazard Classes

**Canadian Carcinogenicity Hazard Class:** Not Applicable.

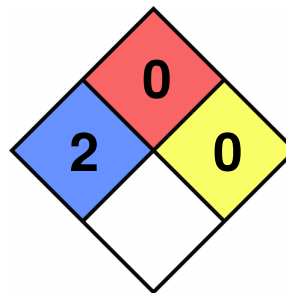
**Physical Hazards Not Otherwise Classified (PHNOC):** Not Applicable.

**Health Hazards Not Otherwise Classified (HHNOC):** Not Applicable.

**Biohazardous Infectious Materials Hazard Class:** Not Applicable.

#### 16.3. National Fire Protection Association (NFPA) Rating

|                        |   |
|------------------------|---|
| <b>Health:</b>         | 2 |
| <b>Flammability:</b>   | 0 |
| <b>Reactivity:</b>     | 0 |
| <b>Special Hazard:</b> |   |



#### 16.4. Document Revision

**Last Revision Date:** 2025-02-03

## DISCLAIMER

When handled properly by qualified personnel, the product described herein does not present a significant health or safety hazard. Alteration of its characteristics by concentration, evaporation, addition of other substances, or other means may present hazards not specifically addressed herein and which must be evaluated by the user. The information furnished herein is believed to be accurate and represents the best data currently available to us. No warranty, expressed or implied, is made and RICCA CHEMICAL COMPANY assumes no legal responsibility or liability whatsoever resulting from its use.