



Safety Data Sheet

Classified According to OSHA Hazard Communication Standard (HCS 2024)

SECTION 1: Identification

1.1. Product Identifier

Trade Name or Designation ICP-MS Calibration Standard 1R, Method 200.8 (94)

Product Number RMSCAL1R

Other Identifying Product Numbers RMSCAL1R-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 412 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

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SECTION 2: Hazard(s) Identification

2.1. Classification of the Substance or Mixture

Hazard Class	Category	Hazard Statements	Precautionary Statements
Skin Corrosion / Irritation	Category 2	H315	P264,P280,P302+P352,P321, P332+P313,P362+P364
Serious Eye Damage / Eye Irritation	Category 2	H319	P264,P280,P305+P351+P338, P337+P313

2.2. GHS Label Elements

Pictograms:



Signal Word: **Warning**

Hazard Statements:

NOTE: Hazard statements may be combined on labels to improve clarity and readability.

Hazard Number	Hazard Statement
H315	Causes skin irritation
H319	Causes serious eye irritation

Precautionary Statements:

NOTE: Precautionary statements may be combined or consolidated on labels to improve clarity and readability.



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Prevention

Precautionary Number	Precautionary Statement
P264	Wash hands, arms, and face thoroughly after handling.
P280	Wear protective gloves and eye protection.

Response

Precautionary Number	Precautionary Statement
P302+P352	IF ON SKIN: Wash with plenty of water.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P332+P313	If skin irritation occurs: Get medical advice or attention.
P337+P313	If eye irritation persists: Get medical advice or attention.
P362+P364	Take off contaminated clothing and wash it before reuse.

2.3. Hazards not Otherwise Classified

No other hazards identified.

2.4. Ingredients of Unknown Acute Toxicity

2 percent of this mixture consists of ingredient(s) of unknown acute oral and dermal toxicity.

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SECTION 3: Composition / Information on Ingredients

3.1. Components of Mixture

Chemical Name (IUPAC)	Common Name and Synonyms	CAS Number	Weight%
water	Water	7732-18-5	97.96
nitric acid	Nitric Acid	7697-37-2	1.99
aluminum trinitrate nonahydrate	Aluminum Nitrate Nonahydrate; Nitric acid, aluminium salt, nonahydrate	7784-27-2	< 0.1
chromium(3+) trinitrate nonahydrate	Chromium Nitrate Nonahydrate; Chromium(III) nitrate nonahydrate	7789-02-8	< 0.1
selenium	Selenium	7782-49-2	< 0.1
thorium(4+) tetranitrate	Thorium Nitrate	13823-29-5	< 0.1
fluorane	Hydrofluoric Acid	7664-39-3	< 0.1
diantimony trioxide	Antimony Trioxide; antimony(III) oxide	1309-64-4	< 0.1
trioxouranium	Uranium Oxide; Uranium trioxide	1344-58-7	< 0.1
lead	Lead	7439-92-1	< 0.1
manganese	Manganese	7439-96-5	< 0.1
molybdenum	Molybdenum	7439-98-7	< 0.1
nickel	Nickel	7440-02-0	< 0.1
thallium	Thallium	7440-28-0	< 0.1
arsenic	Arsenic	7440-38-2	< 0.1
beryllium	Beryllium	7440-41-7	< 0.1
cadmium	Cadmium	7440-43-9	< 0.1
cobalt	Cobalt	7440-48-4	< 0.1
copper	Copper	7440-50-8	< 0.1
vanadium	Vanadium	7440-62-2	< 0.1
zinc	Zinc	7440-66-6	< 0.1

SECTION 4: First-Aid Measures

4.1. Description of Necessary Measures

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.

Ingestion: Dilute with water or milk. Call a physician if necessary.

Inhalation: Not expected to require first aid. If necessary, remove to fresh air.

Skin Contact: IF ON SKIN: Wash with plenty of 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.

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4.2. Most Important Symptoms and Effects, Acute and Delayed

Causes skin irritation CAUTION! Mildly corrosive liquid. Contains trace amounts of known and suspected carcinogens. Avoid contact with skin, eyes, and clothing. If swallowed, dilute with water and call a physician. Wash areas of contact with plenty of water. 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. Immediate Medical Attention or Special Treatment Needed

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, give oxygen. Flush with plenty of water for at least 15 minutes. Call a physician if irritation develops. Dilute with water or milk. Call a physician if necessary.

SECTION 5: Fire-Fighting Measures

5.1. Extinguishing Media

Use any means suitable for extinguishing surrounding fire.

5.2. Specific Hazards Arising from the Substance or Mixture in a Fire

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. May react explosively with combustible organic or readily oxidizable materials such as: alcohols, turpentine, charcoal, organic refuse, metal powder, hydrogen sulfide, etc.

5.3. Special Protective Equipment and Precautions 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

Absorb with suitable material and dispose of in accordance with local regulations.

SECTION 7: Handling and Storage

7.1. Precautions for Safe Handling and Storage Conditions

As with all chemicals, wash hands thoroughly after handling. Avoid contact with eyes and skin. Protect from freezing and physical damage. Do not mix with bases.

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SECTION 8: Exposure Controls / Personal Protection

8.1. Exposure Limits

U.S. OSHA - Permissible Exposure Limits (PEL) - Time Weighted Averages (TWA)

Chemical Name	CAS Number	Exposure Limit
Antimony Trioxide	1309-64-4	"0.5 mg/m ³ TWA (as Sb)" As Antimony compounds [RR-00585-6]
Uranium Oxide	1344-58-7	"0.25 mg/m ³ TWA (as U)" As Uranium, insoluble compounds [RR-00045-3]
Lead	7439-92-1	50 µg/m ³ TWA
Molybdenum	7439-98-7	"15 mg/m ³ TWA (total dust)" As Molybdenum, insoluble compounds [RR-00037-3]
Nickel	7440-02-0	1 mg/m ³ TWA
Beryllium	7440-41-7	0.2 µg/m ³ TWA
Cadmium	7440-43-9	5 µg/m ³ TWA
Cobalt	7440-48-4	0.1 mg/m ³ TWA (dust and fume)
Copper	7440-50-8	0.1 mg/m ³ TWA (fume); 1 mg/m ³ TWA (dust and mist)
Hydrofluoric Acid	7664-39-3	3 ppm TWA (as F)
Nitric Acid	7697-37-2	2 ppm TWA; 5 mg/m ³ TWA
Chromium Nitrate Nonahydrate	7789-02-8	"0.5 mg/m ³ TWA (as Cr)" As Chromium(III) compounds [RR-03889-1]

U.S. OSHA - Permissible Exposure Limits (PEL) - Ceiling Limits

Chemical Name	CAS Number	Exposure Limit
Manganese	7439-96-5	5 mg/m ³ Ceiling (fume)
Beryllium	7440-41-7	2 µg/m ³ Ceiling
Cadmium	7440-43-9	0.3 mg/m ³ Ceiling (applies to any operations or sectors for which the Cadmium standard is stayed or otherwise not in effect, fume); 0.6 mg/m ³ Ceiling (applies to any operations or sectors for which the Cadmium standard is stayed or otherwise not in effect, dust)
Vanadium	7440-62-2	0.5 mg/m ³ Ceiling (respirable dust, as V ₂ O ₅); 0.1 mg/m ³ Ceiling (fume, as V ₂ O ₅)

U.S. OSHA - Permissible Exposure Limits (PEL) - Short Term Exposure Limits (STEL)

Chemical Name	CAS Number	Exposure Limit
Beryllium	7440-41-7	2 µg/m ³ STEL (see 29 CFR 1910.1024)

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U.S. OSHA - Specifically Regulated Chemicals

Chemical Name	CAS Number	Exposure Limit
Lead	7439-92-1	30 µg/m ³ Action Level (See 29 CFR 1910.1025); 50 µg/m ³ TWA
Beryllium	7440-41-7	0.2 µg/m ³ TWA (See 29 CFR 1910.1024); 0.1 µg/m ³ Action Level; 2.0 µg/m ³ STEL (15 min)
Cadmium	7440-43-9	5 µg/m ³ TWA (See 29 CFR 1910.1027); 2.5 µg/m ³ Action Level

ACGIH - Threshold Limit Values - Ceilings (TLV-C)

Chemical Name	CAS Number	Exposure Limit
Hydrofluoric Acid	7664-39-3	2 ppm Ceiling (as F)

ACGIH - Threshold Limit Values - Short Term Exposure Limits (TLV-STEL)

Chemical Name	CAS Number	Exposure Limit
Uranium Oxide	1344-58-7	"0.6 mg/m ³ STEL (as U)" As Uranium soluble and insoluble compounds [RR-00617-7]
Nitric Acid	7697-37-2	4 ppm STEL

ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA)

Chemical Name	CAS Number	Exposure Limit
Antimony Trioxide	1309-64-4	0.02 mg/m ³ TWA (inhalable particulate matter)
Uranium Oxide	1344-58-7	"0.2 mg/m ³ TWA (as U)" As Uranium soluble and insoluble compounds [RR-00617-7]
Lead	7439-92-1	0.05 mg/m ³ TWA
Manganese	7439-96-5	0.02 mg/m ³ TWA (respirable particulate matter); 0.1 mg/m ³ TWA (inhalable particulate matter)
Molybdenum	7439-98-7	10 mg/m ³ TWA (inhalable particulate matter); 3 mg/m ³ TWA (respirable particulate matter)
Nickel	7440-02-0	1.5 mg/m ³ TWA (inhalable particulate matter)
Thallium	7440-28-0	0.02 mg/m ³ TWA (inhalable particulate matter)
Arsenic	7440-38-2	0.01 mg/m ³ TWA
Beryllium	7440-41-7	0.00005 mg/m ³ TWA (inhalable particulate matter)
Cadmium	7440-43-9	0.01 mg/m ³ TWA; 0.002 mg/m ³ TWA (respirable particulate matter)
Cobalt	7440-48-4	0.02 mg/m ³ TWA (inhalable particulate matter)
Copper	7440-50-8	0.2 mg/m ³ TWA (fume)
Hydrofluoric Acid	7664-39-3	0.5 ppm TWA (as F)
Nitric Acid	7697-37-2	2 ppm TWA
Selenium	7782-49-2	0.2 mg/m ³ TWA

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8.2. Engineering Controls

No specific controls are needed. Normal room ventilation is adequate.

8.3. Individual Protective Measures and Personal Protective Equipment

Respiratory Protection: Normal room ventilation is adequate.

Skin Protection: Chemical resistant gloves.

Eye Protection: Safety glasses or goggles.

SECTION 9: Physical and Chemical Properties

9.1. Basic Physical and Chemical Properties

Physical State: liquid

Color: Colorless

Odor: Data not available.

Odor Threshold: Data not available.

Melting/Freezing Point: Data not available.

Boiling Point/Range: Approximately 100°C

Flammability: Data not available.

Flammability/Explosive Limits: Data not available.

Flash Point: Not flammable

Auto-Ignition Temperature: Data not available.

Decomposition Temperature: Data not available.

pH: acidic

Kinematic Viscosity: Data not available.

Solubility: miscible

Vapor Pressure: Data not available.

Evaporation Rate: Data not available.

Relative Density: 1.0

Relative Vapor Density: Data not available.

Particle Characteristics: Data not available.

Partition Coefficient n-octanol/water, log Data not available.

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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.

10.3. Conditions to Avoid and Incompatible Materials

Strong bases, metallic powders, Carbides, Hydrogen Sulfide, Turpentine and combustible organics.

10.4. Hazardous Decomposition Products

Will not occur.

SECTION 11: Toxicological Information

11.1. Information on Toxicological Effects

Acute Toxicity - Oral Exposure:

Not acutely toxic.

Chemical Name	CAS Number	Toxicity
Antimony Trioxide	1309-64-4	Oral LD50 Rat >34600 mg/kg (Source: NLM_CIP)
Uranium Oxide	1344-58-7	Oral LD50 Acute Toxicity Estimate 5 mg/kg (Source: ECHA)
Manganese	7439-96-5	Oral LD50 Rat 9 g/kg (Source: NLM_CIP)
Nickel	7440-02-0	Oral LD50 Rat >9000 mg/kg (powder suspended in mineral oil, Source: EU_RAR)
Thallium	7440-28-0	Oral LD50 Acute Toxicity Estimate 5 mg/kg (Source: ECHA)
Arsenic	7440-38-2	Oral LD50 Acute Toxicity Estimate 100 mg/kg (Source: ECHA)
Beryllium	7440-41-7	Oral LD50 Acute Toxicity Estimate 100 mg/kg (Source: ECHA)
Cadmium	7440-43-9	Oral LD50 Rat 2300 mg/kg (Source: Canada_WHMIS)
Cobalt	7440-48-4	Oral LD50 Rat 6171 mg/kg (Source: NLM_CIP)
Copper	7440-50-8	Oral LD50 Mouse 413 mg/kg (Source: Canada_WHMIS)
Vanadium	7440-62-2	Oral LD50 Rat >2000 mg/kg (females, Source: NLM_HSDB)
Hydrofluoric Acid	7664-39-3	Oral LD50 Acute Toxicity Estimate 5 mg/kg (Source: Canada_WHMIS)
Selenium	7782-49-2	Oral LD50 Acute Toxicity Estimate 100 mg/kg (Source: ECHA)
Chromium Nitrate Nonahydrate	7789-02-8	Oral LD50 Rat 3250 mg/kg (Source: NLM_CIP)

Acute Toxicity - Dermal Exposure:

No information found.

Chemical Name	CAS Number	Toxicity
Antimony Trioxide	1309-64-4	Dermal LD50 Rabbit >2000 mg/kg (Source: NLM_HSDB)
Molybdenum	7439-98-7	Dermal LD50 Rat >2000 mg/kg (Source: ECHA_API)

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Acute Toxicity - Inhalation Exposure:

Not acutely toxic.

Chemical Name	CAS Number	Toxicity
Antimony Trioxide	1309-64-4	Inhalation LC50 Rat >5.2 mg/L 4 h (no deaths occurred, aerosol, Source: ECHA_API)
Uranium Oxide	1344-58-7	Inhalation LC50 Acute Toxicity Estimate 0.05 mg/L 4 h (Source: ECHA)
Manganese	7439-96-5	Inhalation LC50 Rat >5.14 mg/L 4 h (no deaths occurred, dust, Source: ECHA_API)
Molybdenum	7439-98-7	Inhalation LC50 Rat >5.1 mg/L 4 h (death occurred (1 out of 10 tested animals), dust, Source: ECHA)
Nickel	7440-02-0	Inhalation LC50 Rat >10.2 mg/L 1 h (no deaths occurred, dust, Source: EU_RAR)
Thallium	7440-28-0	Inhalation LC50 Acute Toxicity Estimate 0.05 mg/L 4 h (Source: ECHA)
Arsenic	7440-38-2	Inhalation LC50 Acute Toxicity Estimate 0.5 mg/L 4 h (Source: ECHA)
Beryllium	7440-41-7	Inhalation LC50 Acute Toxicity Estimate 0.05 mg/L 4 h (Source: ECHA)
Cadmium	7440-43-9	Inhalation LC50 Rat 25 mg/m3 30 min (Source: NLM_CIP)
Cobalt	7440-48-4	Inhalation LC50 Rat <0.05 mg/L 4 h (death occurred, dust, Source: AICIS)
Copper	7440-50-8	Inhalation LC50 Rat >5.11 mg/L 4 h (no deaths occurred, dust, Source: ECHA)
Hydrofluoric Acid	7664-39-3	Inhalation LC50 Rat 0.79 mg/L 1 h (vapor, Source: JAPAN_GHS)
Nitric Acid	7697-37-2	Inhalation LC50 Rat 3.22 mg/L 4 h (Source: WHMIS)
Selenium	7782-49-2	Inhalation LC50 Acute Toxicity Estimate 0.5 mg/L 4 h (Source: ECHA)

11.2 Carcinogenicity:

International Agency for Research on Cancer (IARC)

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Chemical Name	CAS Number	Classification
Antimony Trioxide	1309-64-4	Group 2A (Probably Carcinogenic to Humans) - Monograph 131 [2023]; Monograph 47 [1989] As Trivalent antimony compounds
Lead	7439-92-1	Group 2B (Possibly Carcinogenic to Humans) - Supplement 7 [1987]; Monograph 23 [1980]
Nickel	7440-02-0	Group 2B (Possibly Carcinogenic to Humans) - Monograph 49 [1990]; Supplement 7 [1987]
Arsenic	7440-38-2	Group 1 (Carcinogenic to Humans) - Monograph 100C [2012]; Monograph 84 [2004] (in drinking water); Supplement 7 [1987]; Monograph 23 [1980]
Beryllium	7440-41-7	Group 1 (Carcinogenic to Humans) - Monograph 100C [2012]; Monograph 58 [1993]; Supplement 7 [1987]
Cadmium	7440-43-9	Group 1 (Carcinogenic to Humans) - Monograph 100C [2012]; Monograph 58 [1993]; Supplement 7 [1987]
Cobalt	7440-48-4	Group 2A (Probably Carcinogenic to Humans) - Monograph 131 [2023]; Monograph 86 [2006]; Monograph 52 [1991]
Nitric Acid	7697-37-2	Group 1 (Carcinogenic to Humans) - Monograph 100F [2012]; Monograph 54 [1992] As Acid mists, strong inorganic
Selenium	7782-49-2	Group 3 (Not Classified) - Supplement 7 [1987]; Monograph 9 [1975]
Chromium Nitrate Nonahydrate	7789-02-8	Group 3 (Not Classified) - Monograph 49 [1990]; Supplement 7 [1987]; Monograph 23 [1980]; Monograph 2 [1973] As Chromic nitrate [13548-38-4]

National Toxicology Program (NTP)

Chemical Name	CAS Number	Classification
Antimony Trioxide	1309-64-4	Reasonably Anticipated To Be A Human Carcinogen; Male Rat - Some Evidence; Female Rat - Some Evidence; Male Mice - Clear Evidence; Female Mice - Clear Evidence (TR-590)
Lead	7439-92-1	Reasonably Anticipated To Be A Human Carcinogen (listed under Lead and lead compounds)
Nickel	7440-02-0	Reasonably Anticipated To Be A Human Carcinogen (listed under Nickel compounds and metallic nickel)
Arsenic	7440-38-2	Known Human Carcinogen
Beryllium	7440-41-7	Known Human Carcinogen
Cadmium	7440-43-9	Known Human Carcinogen
Cobalt	7440-48-4	Reasonably Anticipated To Be A Human Carcinogen; Male Rat - Clear Evidence; Female Rat - Clear Evidence; Male Mice - Clear Evidence; Female Mice - Clear Evidence (TR-581)

U.S. OSHA specifically regulated carcinogens

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Chemical Name	CAS Number	Classification
Beryllium	7440-41-7	see 29 CFR 1910.1024
Cadmium	7440-43-9	see 29 CFR 1910.1027

11.3 Additional Toxicology Information:

Causes skin irritation. Causes serious eye irritation.

SECTION 12: Ecological Information

12.1. Ecotoxicity

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Chemical Name	CAS Number	Species	Exposure	Toxicity
Antimony Trioxide	1309-64-4	Freshwater Algae	Acute	EC50 72 h Pseudokirchneriella subcapitata 0.63 - 0.8 mg/L (EPA); EC50 96 h Pseudokirchneriella subcapitata 0.65 - 0.81 mg/L (EPA)
Nickel	7440-02-0	Freshwater Algae	Acute	EC50 72 h Pseudokirchneriella subcapitata 0.18 mg/L (IUCLID); EC50 96 h Pseudokirchneriella subcapitata 0.174 - 0.311 mg/L [static] (EPA)
Copper	7440-50-8	Freshwater Algae	Acute	EC50 72 h Pseudokirchneriella subcapitata 0.0426 - 0.0535 mg/L [static] (EPA); EC50 96 h Pseudokirchneriella subcapitata 0.031 - 0.054 mg/L [static] (EPA)
Zinc	7440-66-6	Freshwater Algae	Acute	EC50 96 h Pseudokirchneriella subcapitata 0.11 - 0.271 mg/L [static] (EPA); EC50 72 h Pseudokirchneriella subcapitata 0.09 - 0.125 mg/L [static] (EPA)
Antimony Trioxide	1309-64-4	Freshwater Fish	Acute	LC50 96 h Pimephales promelas >80 mg/L [static] (EPA); LC50 96 h Brachydanio rerio >1000 mg/L [static] (IUCLID)
Lead	7439-92-1	Freshwater Fish	Acute	LC50 96 h Cyprinus carpio 0.44 mg/L [semi-static] (EPA); LC50 96 h Oncorhynchus mykiss 1.17 mg/L [flow-through] (EPA); LC50 96 h Oncorhynchus mykiss 1.32 mg/L [static] (EPA)
Manganese	7439-96-5	Freshwater Fish	Acute	LC50 96 h Oncorhynchus mykiss >3.6 mg/L [semi-static] (ECHA)
Nickel	7440-02-0	Freshwater Fish	Acute	LC50 96 h Brachydanio rerio >100 mg/L (IUCLID); LC50 96 h Cyprinus carpio 1.3 mg/L [semi-static] (EPA); LC50 96 h Cyprinus carpio 10.4 mg/L [static] (EPA)
Cadmium	7440-43-9	Freshwater Fish	Acute	LC50 96 h Oncorhynchus mykiss 0.003 mg/L [flow-through] (EPA); LC50 96 h Oncorhynchus mykiss 0.006 mg/L [static] (EPA); LC50 96 h Cyprinus carpio 0.002 mg/L (EPA); LC50 96 h Cyprinus carpio 4.26 mg/L [semi-static] (EPA); LC50 96 h Cyprinus carpio 0.24 mg/L [static] (EPA); LC50 96 h Lepomis macrochirus 21.1 mg/L [flow-through] (EPA); LC50 96 h Oryzias latipes 0.016 mg/L (EPA); LC50 96 h Pimephales promelas 0.0004 - 0.003 mg/L (EPA)
Cobalt	7440-48-4	Freshwater Fish	Acute	LC50 96 h Brachydanio rerio >100 mg/L [static] (IUCLID)

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Copper	7440-50-8	Freshwater Fish	Acute	LC50 96 h Pimephales promelas 0.0068 - 0.0156 mg/L (EPA); LC50 96 h Pimephales promelas <0.3 mg/L [static] (EPA); LC50 96 h Pimephales promelas 0.2 mg/L [flow-through] (EPA); LC50 96 h Oncorhynchus mykiss 0.052 mg/L [flow-through] (EPA); LC50 96 h Lepomis macrochirus 1.25 mg/L [static] (EPA); LC50 96 h Cyprinus carpio 0.3 mg/L [semi-static] (EPA); LC50 96 h Cyprinus carpio 0.8 mg/L [static] (EPA); LC50 96 h Poecilia reticulata 0.112 mg/L [flow-through] (EPA)
Zinc	7440-66-6	Freshwater Fish	Acute	LC50 96 h Pimephales promelas 2.16 - 3.05 mg/L [flow-through] (EPA); LC50 96 h Pimephales promelas 0.211 - 0.269 mg/L [semi-static] (EPA); LC50 96 h Pimephales promelas 2.66 mg/L [static] (EPA); LC50 96 h Cyprinus carpio 30 mg/L (EPA); LC50 96 h Cyprinus carpio 0.45 mg/L [semi-static] (EPA); LC50 96 h Cyprinus carpio 7.8 mg/L [static] (EPA); LC50 96 h Lepomis macrochirus 3.5 mg/L [static] (EPA); LC50 96 h Oncorhynchus mykiss 0.24 mg/L [flow-through] (EPA); LC50 96 h Oncorhynchus mykiss 0.59 mg/L [semi-static] (EPA); LC50 96 h Oncorhynchus mykiss 0.41 mg/L [static] (EPA)
Selenium	7782-49-2	Freshwater Fish	Acute	LC50 96 h Oncorhynchus mykiss >100 mg/L [semi-static] (ECHA)
Antimony Trioxide	1309-64-4	Water Flea	Acute	EC50 48 h Daphnia magna >1000 mg/L (IUCLID); EC50 48 h Daphnia magna 361.5 - 496.0 mg/L [Static] (EPA)
Lead	7439-92-1	Water Flea	Acute	EC50 48 h water flea 600 µg/L
Nickel	7440-02-0	Water Flea	Acute	EC50 48 h Daphnia magna >100 mg/L (IUCLID); EC50 48 h Daphnia magna 1 mg/L [Static] (EPA)
Cadmium	7440-43-9	Water Flea	Acute	EC50 48 h Daphnia magna 0.0244 mg/L [Static] (EPA)
Copper	7440-50-8	Water Flea	Acute	EC50 48 h Daphnia magna 0.03 mg/L [Static] (EPA)
Zinc	7440-66-6	Water Flea	Acute	EC50 48 h Daphnia magna 0.139 - 0.908 mg/L [Static] (EPA)
Hydrofluoric Acid	7664-39-3	Water Flea	Acute	EC50 48 h Daphnia species 270 mg/L (IUCLID)
Antimony Trioxide	1309-64-4	Water Flea	Chronic	NOEC 21 d Daphnia magna 1.74 mg/L [static] (reproduction, ECHA_API)

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Selenium	7782-49-2	Water Flea	Chronic	NOEC 21 d Daphnia magna $\geq 3.42 \mu\text{g/L}$ [semi-static] (reproduction, ECHA_API)
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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.

SECTION 14: Transportation Information

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

Not regulated according to DOT regulations.



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

Not regulated according to IATA Dangerous Goods Regulations.

14.3 Transportation of Dangerous Goods (TDG, Canada)

Not regulated according to TDG regulations.

SECTION 15: Regulatory Information

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15.01. Occupational Safety and Health Administration (OSHA) Hazards

Chemical Name	CAS Number	Regulatory Information
Lead	7439-92-1	30 µg/m ³ Action Level (See 29 CFR 1910.1025); 50 µg/m ³ TWA (See 29 CFR 1910.1025)
Beryllium	7440-41-7	0.2 µg/m ³ TWA (See 29 CFR 1910.1024); 0.1 µg/m ³ Action Level (See 29 CFR 1910.1024); 2.0 µg/m ³ STEL (See 29 CFR 1910.1024, 15 min)
Cadmium	7440-43-9	5 µg/m ³ TWA (See 29 CFR 1910.1027); 2.5 µg/m ³ Action Level

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

Chemical Name	CAS Number	RQ	TPQ
Hydrofluoric Acid	7664-39-3	100 lb TPQ	100 lb EPCRA RQ
Nitric Acid	7697-37-2	1000 lb TPQ	1000 lb EPCRA RQ

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

Chemical Name	CAS Number	Regulatory Information
Antimony Trioxide	1309-64-4	1000 lb final RQ; 454 kg final RQ
Lead	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 µm); 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 µm)
Nickel	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 µm); 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 µm)
Thallium	7440-28-0	1000 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 µm); 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 µm)
Arsenic	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 µm); 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 µm)
Beryllium	7440-41-7	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 µm); 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 µm)



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Cadmium	7440-43-9	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 $>100\text{ }\mu\text{m}$)
Copper	7440-50-8	5000 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 $>100\text{ }\mu\text{m}$); 2270 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 $>100\text{ }\mu\text{m}$)
Zinc	7440-66-6	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 $>100\text{ }\mu\text{m}$); 1000 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 $>100\text{ }\mu\text{m}$)
Hydrofluoric Acid	7664-39-3	100 lb final RQ; 45.4 kg final RQ
Nitric Acid	7697-37-2	1000 lb final RQ; 454 kg final RQ
Selenium	7782-49-2	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 $>100\text{ }\mu\text{m}$)

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15.04. Superfund Amendments and Reauthorization Act (SARA) 313 Toxics Release Inventory (TRI)

Chemical Name	CAS Number	List	Regulatory Information
Antimony Trioxide	1309-64-4	Emission Reporting	"1.0 % de minimis concentration (includes any unique chemical substance that contains Antimony as part of that chemical's infrastructure, listed under Chemical Category N010)" As Antimony compounds [RR-00585-6]
Thorium Nitrate	13823-29-5	Emission Reporting	"1.0 % de minimis concentration (reportable only when in aqueous solution, listed under Chemical Category N511)" As Nitrate compounds, water dissociable [RR-03804-0]
Lead	7439-92-1	Emission Reporting	not eligible for the de minimis exemption
Lead	7439-92-1	Chemicals of Special Concern	100 lb RT (this lower threshold does not apply to lead when it is contained in stainless steel, brass or bronze alloy)
Manganese	7439-96-5	Emission Reporting	1.0 % de minimis concentration
Nickel	7440-02-0	Emission Reporting	0.1 % de minimis concentration
Thallium	7440-28-0	Emission Reporting	1.0 % de minimis concentration
Arsenic	7440-38-2	Emission Reporting	0.1 % de minimis concentration
Beryllium	7440-41-7	Emission Reporting	0.1 % de minimis concentration
Cadmium	7440-43-9	Emission Reporting	0.1 % de minimis concentration
Cobalt	7440-48-4	Emission Reporting	0.1 % de minimis concentration
Copper	7440-50-8	Emission Reporting	1.0 % de minimis concentration
Vanadium	7440-62-2	Emission Reporting	1.0 % de minimis concentration (except when contained in an alloy)
Zinc	7440-66-6	Emission Reporting	1.0 % de minimis concentration (dust or fume only)
Hydrofluoric Acid	7664-39-3	Emission Reporting	1.0 % de minimis concentration
Nitric Acid	7697-37-2	Emission Reporting	1.0 % de minimis concentration
Selenium	7782-49-2	Emission Reporting	1.0 % de minimis concentration
Aluminum Nitrate Nonahydrate	7784-27-2	Emission Reporting	"1.0 % de minimis concentration (reportable only when in aqueous solution, listed under Chemical Category N511)" As Nitrate compounds, water dissociable [RR-03804-0]

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Chromium Nitrate Nonahydrate	7789-02-8	Emission Reporting	<p>"1.0 % de minimis concentration (reportable only when in aqueous solution, listed under Chemical Category N511)" As Nitrate compounds, water dissociable [RR-03804-0];</p> <p>"1.0 % de minimis concentration (includes any unique chemical substance that contains Chromium as part of that chemical's infrastructure except for Chromite ore mined in the Transvaal Region of South Africa and the unreacted ore component of the Chromite ore processing residue (COPR), no de minimis concentration has been assigned to this chemical category, listed under Chemical Category N090)" As Chromium(III) compounds [RR-03889-1]</p>
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15.05. Massachusetts Right-to-Know Substance List

Chemical Name	CAS Number	Regulatory Information
Antimony Trioxide	1309-64-4	Present
Thorium Nitrate	13823-29-5	Present
Lead	7439-92-1	Teratogen
Manganese	7439-96-5	Present
Molybdenum	7439-98-7	Present
Nickel	7440-02-0	Carcinogen; Extraordinarily hazardous
Thallium	7440-28-0	Present
Arsenic	7440-38-2	Carcinogen; Extraordinarily hazardous
Beryllium	7440-41-7	Carcinogen; Extraordinarily hazardous
Cadmium	7440-43-9	Carcinogen; Extraordinarily hazardous
Cobalt	7440-48-4	Present
Copper	7440-50-8	Present
Vanadium	7440-62-2	Present (dust and fume)
Zinc	7440-66-6	Present
Hydrofluoric Acid	7664-39-3	Extraordinarily hazardous
Nitric Acid	7697-37-2	Extraordinarily hazardous
Selenium	7782-49-2	Present

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15.06. Pennsylvania Right-to-Know Hazardous Substances

Chemical Name	CAS Number	Regulatory Information
Antimony Trioxide	1309-64-4	Environmental hazard
Thorium Nitrate	13823-29-5	Present
Lead	7439-92-1	Environmental hazard
Manganese	7439-96-5	Environmental hazard
Molybdenum	7439-98-7	Present
Nickel	7440-02-0	Environmental hazard; Special hazardous substance
Thallium	7440-28-0	Environmental hazard
Arsenic	7440-38-2	Environmental hazard (including inorganic); Special hazardous substance
Beryllium	7440-41-7	Environmental hazard (dust; metal); Special hazardous substance
Cadmium	7440-43-9	Environmental hazard (dust; fume; metal; powder); Special hazardous substance (metal; powder)
Cobalt	7440-48-4	Environmental hazard; Present (fume)
Copper	7440-50-8	Environmental hazard (dust; fume; metal)
Vanadium	7440-62-2	Environmental hazard (dust; fume)
Zinc	7440-66-6	Environmental hazard
Hydrofluoric Acid	7664-39-3	Environmental hazard
Nitric Acid	7697-37-2	Environmental hazard
Selenium	7782-49-2	Environmental hazard
Aluminum Nitrate Nonahydrate	7784-27-2	"Present" As Aluminum soluble salts [RR-00021-5]
Chromium Nitrate Nonahydrate	7789-02-8	"Environmental hazard" As Chromium compounds [RR-00634-8]

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Classified According to OSHA Hazard Communication Standard (HCS 2024)

15.07. New Jersey Worker and Community Right-to-Know Components

Chemical Name	CAS Number	Regulatory Information
Antimony Trioxide	1309-64-4	sn 0149
Thorium Nitrate	13823-29-5	sn 1857
Lead	7439-92-1	sn 1096
Manganese	7439-96-5	sn 1155
Molybdenum	7439-98-7	sn 1309
Nickel	7440-02-0	sn 1341
Thallium	7440-28-0	sn 1840
Arsenic	7440-38-2	sn 0152
Beryllium	7440-41-7	sn 0222
Cadmium	7440-43-9	sn 0305
Cobalt	7440-48-4	sn 0520
Copper	7440-50-8	sn 0528
Vanadium	7440-62-2	sn 3762
Zinc	7440-66-6	sn 2021
Hydrofluoric Acid	7664-39-3	sn 3759
Nitric Acid	7697-37-2	sn 1356
Selenium	7782-49-2	sn 1648
Aluminum Nitrate Nonahydrate	7784-27-2	"sn 0061" As Aluminum nitrate [13473-90-0]; "sn 3722" As Nitrate compounds [RR-01770-9]
Chromium Nitrate Nonahydrate	7789-02-8	"sn 0435" As Chromium nitrate [13548-38-4]; "sn 2245" As Chromium compounds [RR-00634-8]; "sn 3722" As Nitrate compounds [RR-01770-9]; "sn 2870" As Chromium(III) compounds [RR-03889-1]

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15.08. California Proposition 65

Chemical Name	CAS Number	Regulatory Information
Antimony Trioxide	1309-64-4	carcinogen, 10/1/1990
Antimony Trioxide	1309-64-4	0.13 µg/day NSRL (inhalation)
Lead	7439-92-1	carcinogen, 10/1/1992
Lead	7439-92-1	developmental toxicity, 2/27/1987
Lead	7439-92-1	male reproductive toxicity, 2/27/87
Lead	7439-92-1	female reproductive toxicity 2/27/87
Lead	7439-92-1	15 µg/day NSRL (oral)
Nickel	7440-02-0	carcinogen, 10/1/1989 (metallic)
Arsenic	7440-38-2	0.06 µg/day NSRL (inhalation); 10 µg/day NSRL (except inhalation)
Beryllium	7440-41-7	carcinogen, 10/1/1987
Beryllium	7440-41-7	0.1 µg/day NSRL
Cadmium	7440-43-9	carcinogen, 10/1/1987
Cadmium	7440-43-9	developmental toxicity, 5/1/1997
Cadmium	7440-43-9	male reproductive toxicity, 5/1/97
Cadmium	7440-43-9	0.05 µg/day NSRL (inhalation)
Cobalt	7440-48-4	carcinogen, 7/1/1992 (powder)

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

Chemical Name	CAS Number	List	Status
Antimony Trioxide	1309-64-4	DSL	Present
Uranium Oxide	1344-58-7	DSL	Present
Thorium Nitrate	13823-29-5	DSL	Present
Lead	7439-92-1	DSL	Present
Manganese	7439-96-5	DSL	Present
Molybdenum	7439-98-7	DSL	Present
Nickel	7440-02-0	DSL	Present
Thallium	7440-28-0	DSL	Present
Arsenic	7440-38-2	DSL	Present
Beryllium	7440-41-7	DSL	Present
Cadmium	7440-43-9	DSL	Present
Cobalt	7440-48-4	DSL	Present
Copper	7440-50-8	DSL	Present
Vanadium	7440-62-2	DSL	Present
Zinc	7440-66-6	DSL	Present
Hydrofluoric Acid	7664-39-3	DSL	Present
Nitric Acid	7697-37-2	DSL	Present
Water	7732-18-5	DSL	Present
Selenium	7782-49-2	DSL	Present
Aluminum Nitrate Nonahydrate	7784-27-2	DSL	"Present" As Aluminum nitrate [13473-90-0]
Chromium Nitrate Nonahydrate	7789-02-8	DSL	"Present" As Chromium nitrate [13548-38-4]

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

Chemical Name	CAS Number	Status
Antimony Trioxide	1309-64-4	Present (ACTIVE)
Uranium Oxide	1344-58-7	Present (ACTIVE)
Thorium Nitrate	13823-29-5	Present (ACTIVE)
Lead	7439-92-1	Present (ACTIVE)
Manganese	7439-96-5	Present (ACTIVE)
Molybdenum	7439-98-7	Present (ACTIVE)
Nickel	7440-02-0	Present (ACTIVE)
Thallium	7440-28-0	Present (ACTIVE)
Arsenic	7440-38-2	Present (ACTIVE)
Beryllium	7440-41-7	Present (ACTIVE)
Cadmium	7440-43-9	Present (ACTIVE)
Cobalt	7440-48-4	Present (ACTIVE)
Copper	7440-50-8	Present (ACTIVE)
Vanadium	7440-62-2	Present (ACTIVE)
Zinc	7440-66-6	Present (ACTIVE)
Hydrofluoric Acid	7664-39-3	Present (ACTIVE)
Nitric Acid	7697-37-2	Present (ACTIVE)
Water	7732-18-5	Present [XU] (ACTIVE)
Selenium	7782-49-2	Present (ACTIVE)
Aluminum Nitrate Nonahydrate	7784-27-2	"Present (ACTIVE)" As Nitric acid, aluminum salt (3:1) [13473-90-0]
Chromium Nitrate Nonahydrate	7789-02-8	"Present (ACTIVE)" As Nitric acid, chromium(3+) salt (3:1) [13548-38-4]

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

Chemical Name	CAS Number	List	Number
Antimony Trioxide	1309-64-4	EINECS	215-175-0
Uranium Oxide	1344-58-7	EINECS	215-701-9
Thorium Nitrate	13823-29-5	EINECS	237-514-1
Lead	7439-92-1	EINECS	231-100-4
Manganese	7439-96-5	EINECS	231-105-1
Molybdenum	7439-98-7	EINECS	231-107-2
Nickel	7440-02-0	EINECS	231-111-4
Thallium	7440-28-0	EINECS	231-138-1
Arsenic	7440-38-2	EINECS	231-148-6
Beryllium	7440-41-7	EINECS	231-150-7
Cadmium	7440-43-9	EINECS	231-152-8
Cobalt	7440-48-4	EINECS	231-158-0
Copper	7440-50-8	EINECS	231-159-6
Vanadium	7440-62-2	EINECS	231-171-1
Zinc	7440-66-6	EINECS	231-175-3
Hydrofluoric Acid	7664-39-3	EINECS	231-634-8
Nitric Acid	7697-37-2	EINECS	231-714-2
Water	7732-18-5	EINECS	231-791-2
Selenium	7782-49-2	EINECS	231-957-4
Aluminum Nitrate Nonahydrate	7784-27-2	EINECS	"236-751-8" As Aluminium nitrate [13473-90-0]
Chromium Nitrate Nonahydrate	7789-02-8	EINECS	"236-921-1" As Chromium trinitrate [13548-38-4]

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15.12. China - Inventory of Existing chemical Substances (IECSC)

Chemical Name	CAS Number	Status
Antimony Trioxide	1309-64-4	Present [29709]
Lead	7439-92-1	Present [25764]
Manganese	7439-96-5	Present [24928]
Molybdenum	7439-98-7	Present [25031]
Nickel	7440-02-0	Present [25343]
Thallium	7440-28-0	Present [33902]
Arsenic	7440-38-2	Present [29975]
Beryllium	7440-41-7	Present [25604]
Cadmium	7440-43-9	Present [13601]
Cobalt	7440-48-4	Present [13762]
Copper	7440-50-8	Present [34399]
Vanadium	7440-62-2	Present [12010]
Zinc	7440-66-6	Present [35873]
Hydrofluoric Acid	7664-39-3	Present [27221]
Nitric Acid	7697-37-2	Present [35578]
Water	7732-18-5	Present [32224]
Selenium	7782-49-2	Present [35336]
Aluminum Nitrate Nonahydrate	7784-27-2	Present [21185]
Chromium Nitrate Nonahydrate	7789-02-8	Present [21184]

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15.13. Korea - Existing Chemicals Inventory (KECI/KECL)

Chemical Name	CAS Number	List	Status
Antimony Trioxide	1309-64-4	Annex 1	Present [KE-09846]
Antimony Trioxide	1309-64-4	Annex 3	"Present (97-1-176)" As Inorganic antimony compounds [RR-00554-9]
Thorium Nitrate	13823-29-5	Annex 1	Present [KE-25929]
Lead	7439-92-1	Annex 1	Present [KE-21887]
Manganese	7439-96-5	Annex 1	Present [KE-22999]
Molybdenum	7439-98-7	Annex 1	Present [KE-25427]
Nickel	7440-02-0	Annex 1	Present [KE-25818]
Thallium	7440-28-0	Annex 1	Present [KE-33716]
Arsenic	7440-38-2	Annex 1	Present [KE-01933]
Beryllium	7440-41-7	Annex 1	Present [KE-02829]
Cadmium	7440-43-9	Annex 1	Present [KE-04397]
Cobalt	7440-48-4	Annex 1	Present [KE-06060]
Copper	7440-50-8	Annex 1	Present [KE-08896]
Vanadium	7440-62-2	Annex 1	Present [KE-35266]
Zinc	7440-66-6	Annex 1	Present [KE-35518]
Hydrofluoric Acid	7664-39-3	Annex 1	Present [KE-20198]
Nitric Acid	7697-37-2	Annex 1	Present [KE-25911]
Water	7732-18-5	Annex 1	Present [KE-35400]
Selenium	7782-49-2	Annex 1	Present [KE-30924]
Aluminum Nitrate Nonahydrate	7784-27-2	Annex 1	"Present [KE-01007]" As Aluminum nitrate [13473-90-0]
Chromium Nitrate Nonahydrate	7789-02-8	Annex 1	"Present [KE-06019]" As Chromium nitrate [13548-38-4]

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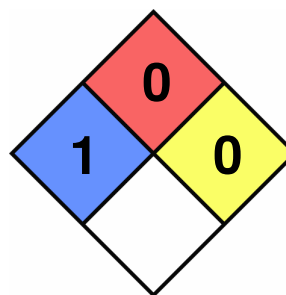
15.14. Japan - Existing and New Chemical Substances Inventory (ENCS)

Chemical Name	CAS Number	MITI No.
Antimony Trioxide	1309-64-4	(1)-543
Lead	7439-92-1	- (exempt)
Manganese	7439-96-5	- (exempt)
Molybdenum	7439-98-7	- (exempt)
Nickel	7440-02-0	- (exempt)
Thallium	7440-28-0	- (exempt)
Arsenic	7440-38-2	- (exempt)
Beryllium	7440-41-7	- (exempt)
Cadmium	7440-43-9	- (exempt)
Cobalt	7440-48-4	- (exempt)
Copper	7440-50-8	- (exempt)
Vanadium	7440-62-2	- (exempt)
Zinc	7440-66-6	- (exempt)
Hydrofluoric Acid	7664-39-3	(1)-306
Nitric Acid	7697-37-2	(1)-394
Water	7732-18-5	- (listed on Japanese Pharmacopoeia 8th Edition)
Selenium	7782-49-2	- (exempt)
Aluminum Nitrate Nonahydrate	7784-27-2	(1)-20 (not considered as a new chemical substance)
Chromium Nitrate Nonahydrate	7789-02-8	(1)-281

SECTION 16: Other Information

16.1 National Fire Protection Associate (NFPA) Rating

Health: 1
Flammability: 0
Reactivity 0
Special Hazard:





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Classified According to OSHA Hazard Communication Standard (HCS 2024)

16.2 Document Revision

Last Revision Date:

2026-05-05

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.