



Safety Data Sheet

Classified According to OSHA Hazard Communication Standard (HCS 2024)

SECTION 1: Identification

1.1. Product Identifier

Trade Name or Designation MISA Standard 5, Fluoride Soluble Group

Product Number RMISA5

Other Identifying Product Numbers RMISA5-100

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 1	H318	P280,P305+P351+P338,P310
Corrosive to Metals	Category 1	H290	P234,P390,P406

2.2. GHS Label Elements

Pictograms:



Signal Word: Danger

Hazard Statements:

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

Hazard Number	Hazard Statement
H290	May be corrosive to metals
H315	Causes skin irritation
H318	Causes serious eye damage

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
P234	Keep only in original packaging.
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.
P310	Immediately call a poison center or doctor.
P332+P313	If skin irritation occurs: Get medical advice or attention.
P362+P364	Take off contaminated clothing and wash it before reuse.
P390	Absorb spillage to prevent material damage.

2.3. Hazards not Otherwise Classified

No other hazards identified.

2.4. Ingredients of Unknown Acute Toxicity

5 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	94.86
nitric acid	Nitric Acid	7697-37-2	4.74
azanium tetrafluoroborate	Ammonium Tetrafluoroborate; Ammonium fluoroborate	13826-83-0	< 0.1
azanium dihydrogen phosphate	Ammonium Dihydrogen Phosphate; Ammonium Phosphate Monobasic	7722-76-1	< 0.1
fluorane	Hydrofluoric Acid	7664-39-3	< 0.1
diazanium sulfate	Ammonium Sulfate	7783-20-2	< 0.1
bis(nitric acid) oxozirconium	Zirconyl Nitrate	13826-66-9	< 0.1
diazanium hexafluorogermanate(2-)	Ammonium Hexafluorogermanate; Ammonium hexafluorogermanate(IV); Diammonium hexafluorogermanate	16962-47-3	< 0.1
ammonium hexafluoroniobate (V)	Ammonium Hexafluoroniobate; Ammonium hexafluoroniobate(1-)	12062-13-4	< 0.1
ammonium heptafluorotantalate (V)	Ammonium Heptafluorotantalate; Tantalate(2-), heptafluoro-, diammonium	12022-02-5	< 0.1
hafnium (IV) oxide	Hafnium Oxide; Hafnium dioxide	12055-23-1	< 0.1
diantimony trioxide	Antimony Trioxide; antimony(III) oxide	1309-64-4	< 0.1
silicon	Silicon	7440-21-3	< 0.1
tin	Tin	7440-31-5	< 0.1
titanium	Titanium	7440-32-6	< 0.1
tungsten	Tungsten	7440-33-7	< 0.1
molybdenum	Molybdenum	7439-98-7	< 0.1
rhenium	Rhenium	7440-15-5	< 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. Do not induce vomiting. 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 Corrosive Liquid. May be fatal if swallowed. Contains a low level of a suspected carcinogen. 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. Immediate Medical Attention or Special Treatment Needed

Immediately call a poison center or doctor. 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. 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 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.

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

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

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. 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]
Zirconyl Nitrate	13826-66-9	"5 mg/m ³ TWA (as Zr)" As Zirconium compounds [RR-00624-6]
Ammonium Tetrafluoroborate	13826-83-0	"2.5 mg/m ³ TWA (as F)" As Fluorides [RR-02792-9]
Molybdenum	7439-98-7	"15 mg/m ³ TWA (total dust)" As Molybdenum, insoluble compounds [RR-00037-3]
Silicon	7440-21-3	15 mg/m ³ TWA (total dust); 5 mg/m ³ TWA (respirable fraction)
Tin	7440-31-5	"2 mg/m ³ TWA (except oxides, as Sn)" As Tin, inorganic compounds [RR-00043-1]
Hydrofluoric Acid	7664-39-3	3 ppm TWA (as F)
Nitric Acid	7697-37-2	2 ppm TWA; 5 mg/m ³ TWA

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

No limits found.

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

No limits found.

U.S. OSHA - Specifically Regulated Chemicals

No limits found.

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
Zirconyl Nitrate	13826-66-9	"10 mg/m ³ STEL (as Zr)" As Zirconium compounds [RR-00624-6]
Nitric Acid	7697-37-2	4 ppm STEL



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

Chemical Name	CAS Number	Exposure Limit
Hafnium Oxide	12055-23-1	"0.5 mg/m3 TWA (as Hf)" As Hafnium compounds [RR-03981-6]
Antimony Trioxide	1309-64-4	0.02 mg/m3 TWA (inhalable particulate matter)
Zirconyl Nitrate	13826-66-9	"5 mg/m3 TWA (as Zr)" As Zirconium compounds [RR-00624-6]
Ammonium Tetrafluoroborate	13826-83-0	"2.5 mg/m3 TWA (as F)" As Fluorides [RR-02792-9]
Molybdenum	7439-98-7	10 mg/m3 TWA (inhalable particulate matter); 3 mg/m3 TWA (respirable particulate matter)
Tin	7440-31-5	2 mg/m3 TWA (inhalable particulate matter)
Tungsten	7440-33-7	3 mg/m3 TWA (respirable particulate matter)
Hydrofluoric Acid	7664-39-3	0.5 ppm TWA (as F)
Nitric Acid	7697-37-2	2 ppm TWA

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.

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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:	Approximately 0°C
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:	1.04
Relative Vapor Density:	Data not available.
Particle Characteristics:	Data not available.
Partition Coefficient n-octanol/water, log	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.

10.3. Conditions to Avoid and Incompatible Materials

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

10.4. Hazardous Decomposition Products

Will not occur.

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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)
Zirconyl Nitrate	13826-66-9	Oral LD50 Rat 2500 mg/kg (Source: NLM_CIP)
Silicon	7440-21-3	Oral LD50 Rat 3160 mg/kg (Source: NLM_CIP)
Tin	7440-31-5	Oral LD50 Rat >2000 mg/kg (Source: Canada_WHMIS)
Hydrofluoric Acid	7664-39-3	Oral LD50 Acute Toxicity Estimate 5 mg/kg (Source: Canada_WHMIS)
Ammonium Dihydrogen Phosphate	7722-76-1	Oral LD50 Rat >2000 mg/kg (no deaths occurred, Source: ECHA)
Ammonium Sulfate	7783-20-2	Oral LD50 Rat 2840 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)
Tin	7440-31-5	Dermal LD50 Rat >2000 mg/kg (Source: ECHA_API)
Tungsten	7440-33-7	Dermal LD50 Rat >2000 mg/kg (Source: ECHA_API)
Ammonium Dihydrogen Phosphate	7722-76-1	Dermal LD50 Rabbit >7940 mg/kg (Source: NLM_CIP)
Ammonium Sulfate	7783-20-2	Dermal LD50 Rat >2000 mg/kg (Source: NLM_HSDB)

Acute Toxicity - Inhalation Exposure:

Inhalation acute toxicity estimate (ATE, vapor): 65.6736 mg/L, 4 h(calculated)

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)
Molybdenum	7439-98-7	Inhalation LC50 Rat >5.1 mg/L 4 h (death occurred (1 out of 10 tested animals), dust, Source: ECHA)
Tin	7440-31-5	Inhalation LC50 Rat >4.75 mg/L 4 h (no deaths occurred, dust, Source: ECHA_API)
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)

11.2 Carcinogenicity:



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International Agency for Research on Cancer (IARC)

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
Ammonium Tetrafluoroborate	13826-83-0	Group 3 (Not Classified) - Supplement 7 [1987] (used in drinking-water); Monograph 27 [1982] As Fluorides, inorganic
Nitric Acid	7697-37-2	Group 1 (Carcinogenic to Humans) - Monograph 100F [2012]; Monograph 54 [1992] As Acid mists, strong inorganic

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)

U.S. OSHA specifically regulated carcinogens

Chemical Name	CAS Number	Classification
No data found.		

11.3 Additional Toxicology Information:

Causes skin irritation. Causes serious eye damage.

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)
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)
Ammonium Dihydrogen Phosphate	7722-76-1	Freshwater Fish	Acute	LC50 96 h Oncorhynchus mykiss >85.9 mg/L [static] (ECHA)
Ammonium Sulfate	7783-20-2	Freshwater Fish	Acute	LC50 96 h Brachydanio rerio 250 mg/L (IUCLID); LC50 96 h Brachydanio rerio 480 mg/L [flow-through] (IUCLID); LC50 96 h Brachydanio rerio 420 mg/L [semi-static] (IUCLID); LC50 96 h Cyprinus carpio 18 mg/L (IUCLID); LC50 96 h Oncorhynchus mykiss 32.2 - 41.9 mg/L [flow-through] (EPA); LC50 96 h Oncorhynchus mykiss 5.2 - 8.2 mg/L [static] (EPA); LC50 96 h Pimephales promelas >100 mg/L (IUCLID); LC50 96 h Poecilia reticulata 123 - 128 mg/L [semi-static] (EPA); LC50 96 h Poecilia reticulata 126 mg/L (IUCLID)
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)
Hydrofluoric Acid	7664-39-3	Water Flea	Acute	EC50 48 h Daphnia species 270 mg/L (IUCLID)
Ammonium Sulfate	7783-20-2	Water Flea	Acute	LC50 48 h Daphnia magna 14 mg/L (IUCLID)
Antimony Trioxide	1309-64-4	Water Flea	Chronic	NOEC 21 d Daphnia magna 1.74 mg/L [static] (reproduction, ECHA_API)

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.

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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)

Sizes: 100 mL

UN Number: UN3264

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

Hazard Class: 8

Packing Group: III

Hazard Label(s):





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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, hydrofluoric acid)

Hazard Class: 8

Packing Group: III

Hazard Label(s):



SECTION 15: Regulatory Information

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15.01. Occupational Safety and Health Administration (OSHA) Hazards

Chemical Name	CAS Number	Regulatory Information
No data found.		

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
Ammonium Tetrafluoroborate	13826-83-0	5000 lb final RQ; 2270 kg final RQ
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

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]
Ammonium Tetrafluoroborate	13826-83-0	Emission Reporting	"1.0 % de minimis concentration (10% of total aqueous Ammonia is reportable under this listing)" As Aqueous ammonia from water dissociable ammonium salts and other sources [RR-47925-4]
Ammonium Hexafluorogermanate	16962-47-3	Emission Reporting	"1.0 % de minimis concentration (10% of total aqueous Ammonia is reportable under this listing)" As Aqueous ammonia from water dissociable ammonium salts and other sources [RR-47925-4]
Hydrofluoric Acid	7664-39-3	Emission Reporting	1.0 % de minimis concentration
Nitric Acid	7697-37-2	Emission Reporting	1.0 % de minimis concentration

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Ammonium Dihydrogen Phosphate	7722-76-1	Emission Reporting	"1.0 % de minimis concentration (10% of total aqueous Ammonia is reportable under this listing)" As Aqueous ammonia from water dissociable ammonium salts and other sources [RR-47925-4]
Ammonium Sulfate	7783-20-2	Emission Reporting	"1.0 % de minimis concentration (10% of total aqueous Ammonia is reportable under this listing)" As Aqueous ammonia from water dissociable ammonium salts and other sources [RR-47925-4]

15.05. Massachusetts Right-to-Know Substance List

Chemical Name	CAS Number	Regulatory Information
Antimony Trioxide	1309-64-4	Present
Ammonium Tetrafluoroborate	13826-83-0	Present
Molybdenum	7439-98-7	Present
Silicon	7440-21-3	Present (dust)
Tin	7440-31-5	Present
Tungsten	7440-33-7	Present
Hydrofluoric Acid	7664-39-3	Extraordinarily hazardous
Nitric Acid	7697-37-2	Extraordinarily hazardous
Ammonium Sulfate	7783-20-2	Present

15.06. Pennsylvania Right-to-Know Hazardous Substances

Chemical Name	CAS Number	Regulatory Information
Antimony Trioxide	1309-64-4	Environmental hazard
Ammonium Tetrafluoroborate	13826-83-0	Environmental hazard
Molybdenum	7439-98-7	Present
Silicon	7440-21-3	Present
Tin	7440-31-5	Present
Tungsten	7440-33-7	Present
Hydrofluoric Acid	7664-39-3	Environmental hazard
Nitric Acid	7697-37-2	Environmental hazard
Ammonium Sulfate	7783-20-2	Environmental hazard

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

Chemical Name	CAS Number	Regulatory Information
Antimony Trioxide	1309-64-4	sn 0149
Zirconyl Nitrate	13826-66-9	"sn 3722" As Nitrate compounds [RR-01770-9]
Ammonium Tetrafluoroborate	13826-83-0	sn 0100
Molybdenum	7439-98-7	sn 1309
Silicon	7440-21-3	sn 3125
Tin	7440-31-5	sn 1858
Titanium	7440-32-6	sn 1860
Tungsten	7440-33-7	sn 1959
Hydrofluoric Acid	7664-39-3	sn 3759
Nitric Acid	7697-37-2	sn 1356

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)

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

Chemical Name	CAS Number	List	Status
Hafnium Oxide	12055-23-1	DSL	Present
Antimony Trioxide	1309-64-4	DSL	Present
Zirconyl Nitrate	13826-66-9	DSL	Present
Ammonium Tetrafluoroborate	13826-83-0	DSL	Present
Molybdenum	7439-98-7	DSL	Present
Rhenium	7440-15-5	DSL	Present
Silicon	7440-21-3	DSL	Present
Tin	7440-31-5	DSL	Present
Titanium	7440-32-6	DSL	Present
Tungsten	7440-33-7	DSL	Present
Hydrofluoric Acid	7664-39-3	DSL	Present
Nitric Acid	7697-37-2	DSL	Present
Ammonium Dihydrogen Phosphate	7722-76-1	DSL	Present
Water	7732-18-5	DSL	Present
Ammonium Sulfate	7783-20-2	DSL	Present

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

Chemical Name	CAS Number	Status
Hafnium Oxide	12055-23-1	Present (ACTIVE)
Antimony Trioxide	1309-64-4	Present (ACTIVE)
Zirconyl Nitrate	13826-66-9	Present (ACTIVE)
Ammonium Tetrafluoroborate	13826-83-0	Present (ACTIVE)
Molybdenum	7439-98-7	Present (ACTIVE)
Rhenium	7440-15-5	Present (ACTIVE)
Silicon	7440-21-3	Present (ACTIVE)
Tin	7440-31-5	Present (ACTIVE)
Titanium	7440-32-6	Present (ACTIVE)
Tungsten	7440-33-7	Present (ACTIVE)
Hydrofluoric Acid	7664-39-3	Present (ACTIVE)
Nitric Acid	7697-37-2	Present (ACTIVE)
Ammonium Dihydrogen Phosphate	7722-76-1	Present (ACTIVE)
Water	7732-18-5	Present [XU] (ACTIVE)
Ammonium Sulfate	7783-20-2	Present (ACTIVE)

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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
Hafnium Oxide	12055-23-1	EINECS	235-013-2
Ammonium Hexafluoroniobate	12062-13-4	EINECS	235-046-2
Antimony Trioxide	1309-64-4	EINECS	215-175-0
Zirconyl Nitrate	13826-66-9	EINECS	237-529-3
Ammonium Tetrafluoroborate	13826-83-0	EINECS	237-531-4
Ammonium Hexafluorogermanate	16962-47-3	EINECS	241-037-4
Molybdenum	7439-98-7	EINECS	231-107-2
Rhenium	7440-15-5	EINECS	231-124-5
Silicon	7440-21-3	EINECS	231-130-8
Tin	7440-31-5	EINECS	231-141-8
Titanium	7440-32-6	EINECS	231-142-3
Tungsten	7440-33-7	EINECS	231-143-9
Hydrofluoric Acid	7664-39-3	EINECS	231-634-8
Nitric Acid	7697-37-2	EINECS	231-714-2
Ammonium Dihydrogen Phosphate	7722-76-1	EINECS	231-764-5
Water	7732-18-5	EINECS	231-791-2
Ammonium Sulfate	7783-20-2	EINECS	231-984-1

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

Chemical Name	CAS Number	Status
Hafnium Oxide	12055-23-1	Present [11367]
Antimony Trioxide	1309-64-4	Present [29709]
Zirconyl Nitrate	13826-66-9	Present [35643]
Ammonium Tetrafluoroborate	13826-83-0	Present [32539]
Molybdenum	7439-98-7	Present [25031]
Rhenium	7440-15-5	Present [21950]
Silicon	7440-21-3	Present [13814]
Tin	7440-31-5	Present [35345]
Titanium	7440-32-6	Present [33910]
Tungsten	7440-33-7	Present [34920]
Hydrofluoric Acid	7664-39-3	Present [27221]
Nitric Acid	7697-37-2	Present [35578]
Ammonium Dihydrogen Phosphate	7722-76-1	Present [22403]
Water	7732-18-5	Present [32224]
Ammonium Sulfate	7783-20-2	Present [23019]

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

Chemical Name	CAS Number	List	Status
Hafnium Oxide	12055-23-1	Annex 1	Present [KE-18176]
Ammonium Hexafluoroniobate	12062-13-4	Annex 1	Present [KE-01672]
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]
Zirconyl Nitrate	13826-66-9	Annex 1	Present [KE-35629]
Ammonium Tetrafluoroborate	13826-83-0	Annex 1	Present [KE-01748]
Molybdenum	7439-98-7	Annex 1	Present [KE-25427]
Rhenium	7440-15-5	Annex 1	Present [KE-30290]
Silicon	7440-21-3	Annex 1	Present [KE-31029]
Tin	7440-31-5	Annex 1	Present [KE-33838]
Titanium	7440-32-6	Annex 1	Present [KE-33881]
Tungsten	7440-33-7	Annex 1	Present [KE-35000]
Hydrofluoric Acid	7664-39-3	Annex 1	Present [KE-20198]
Nitric Acid	7697-37-2	Annex 1	Present [KE-25911]
Ammonium Dihydrogen Phosphate	7722-76-1	Annex 1	Present [KE-01656]
Water	7732-18-5	Annex 1	Present [KE-35400]
Ammonium Sulfate	7783-20-2	Annex 1	Present [KE-01743]

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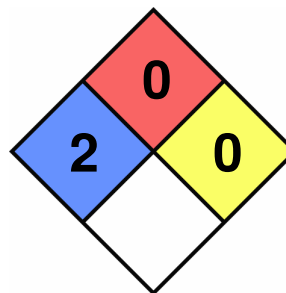
15.14. Japan - Existing and New Chemical Substances Inventory (ENCS)

Chemical Name	CAS Number	MITI No.
Ammonium Heptafluorotantalate	12022-02-5	(1)-318
Hafnium Oxide	12055-23-1	(1)-737
Antimony Trioxide	1309-64-4	(1)-543
Zirconyl Nitrate	13826-66-9	(1)-721
Ammonium Tetrafluoroborate	13826-83-0	(1)-47
Molybdenum	7439-98-7	- (exempt)
Rhenium	7440-15-5	- (exempt)
Silicon	7440-21-3	- (exempt)
Tin	7440-31-5	- (exempt)
Titanium	7440-32-6	- (exempt)
Tungsten	7440-33-7	- (exempt)
Hydrofluoric Acid	7664-39-3	(1)-306
Nitric Acid	7697-37-2	(1)-394
Ammonium Dihydrogen Phosphate	7722-76-1	(1)-379
Water	7732-18-5	- (listed on Japanese Pharmacopoeia 8th Edition)
Ammonium Sulfate	7783-20-2	(1)-400

SECTION 16: Other Information

16.1 National Fire Protection Associate (NFPA) Rating

Health: 2
Flammability: 0
Reactivity: 0
Special Hazard:





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16.2 Document Revision

Last Revision Date:

2026-05-05

DISCLAIMER

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