

1. Identification

Product identifier	ENVIRONMENTAL CALIBRATION STANDARD	
Other means of identification		
Product code	5799	
Recommended use	professional, scientific and technical activities: other professional, scientific and technical activities	
Recommended restrictions	None known.	
Manufacturer/Importer/Supplier/Distributor information		
Manufacturer		
Company name	GFS Chemicals, Inc.	
Address	P.O. Box 245 Powell, OH 43065 United States	
Telephone	Phone	740-881-5501
	Toll Free	800-858-9682
	Fax	740-881-5989
Website	www.gfschemicals.com	
E-mail	service@gfschemicals.com	
Emergency phone number	Emergency Assistance	Chemtrec 800-424-9300

2. Hazard(s) identification

Physical hazards	Not classified.	
Health hazards	Acute toxicity, oral	Category 4
	Skin corrosion/irritation	Category 1
	Serious eye damage/eye irritation	Category 1
	Specific target organ toxicity, repeated exposure	Category 2
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 3
	Hazardous to the aquatic environment, long-term hazard	Category 3
OSHA defined hazards	Not classified.	

Label elements



Signal word	Danger
Hazard statement	Harmful if swallowed. Causes severe skin burns and eye damage. Causes serious eye damage. May cause damage to organs through prolonged or repeated exposure. Harmful to aquatic life with long lasting effects.
Precautionary statement	
Prevention	Do not breathe mist or vapor. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection.
Response	If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician. Wash contaminated clothing before reuse.
Storage	Store locked up. Keep container tightly closed.
Disposal	Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Hazard(s) not otherwise classified (HNOC) None known.

Supplemental information 3.38% of the mixture consists of component(s) of unknown acute oral toxicity. 4.43% of the mixture consists of component(s) of unknown acute dermal toxicity. 4.43% of the mixture consists of component(s) of unknown acute hazards to the aquatic environment. 4.43% of the mixture consists of component(s) of unknown long-term hazards to the aquatic environment.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
WATER		7732-18-5	93.34
NITRIC ACID		7697-37-2	3 - < 5
MAGNESIUM NITRATE, HEXAHYDRATE		13446-18-9	1.05
FERRIC NITRATE, NONAHYDRATE	Nitric acid, iron(3+) salt, nonahydrate	7782-61-8	0.72
HYDROGEN FLUORIDE		7664-39-3	0.24
ALUMINUM NITRATE, NONAHYDRATE	Nitric acid, aluminum salt, nonahydrate	7784-27-2	0.01
NICKEL NITRATE, HEXAHYDRATE		13478-00-7	0.01
COBALT NITRATE		10026-22-9	0.005
CUPRIC NITRATE, HYDRATE	COPPER(II) NITRATE, HYDRATE	19004-19-4	0.004
CADMIUM NITRATE		10022-68-1	0.003
BARIUM NITRATE		10022-31-8	0.002
LEAD NITRATE		10099-74-8	0.002
MOLYBDENUM TRIOXIDE	MOLYBDENUM OXIDE MOLYBDENUM(VI) OXIDE	1313-27-5	0.002
SILVER NITRATE		7761-88-8	0.002
VANADIUM PENTOXIDE		1314-62-1	0.002
ANTIMONY OXIDE		1309-64-4	0.001
SELENIUM DIOXIDE		7446-08-4	0.001
THALLIC OXIDE		1314-32-5	0.001
Other components below reportable levels			1 - < 3

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First-aid measures

Inhalation

Move to fresh air. Call a physician if symptoms develop or persist.

Skin contact

Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician or poison control center immediately. Chemical burns must be treated by a physician. Wash contaminated clothing before reuse.

Eye contact

Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.

Ingestion

Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

Most important symptoms/effects, acute and delayed

Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Prolonged exposure may cause chronic effects.

Indication of immediate medical attention and special treatment needed

Provide general supportive measures and treat symptomatically. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

General information

If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

5. Fire-fighting measures

Suitable extinguishing media

This product is not flammable. Use extinguishing agent suitable for type of surrounding fire.

Unsuitable extinguishing media

Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical

During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire fighting equipment/instructions Move containers from fire area if you can do so without risk.

Specific methods Use standard firefighting procedures and consider the hazards of other involved materials.

General fire hazards No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up This product is miscible in water. Should not be released into the environment. Prevent product from entering drains.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Environmental precautions Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling Do not breathe mist or vapor. Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Avoid prolonged exposure. When using, do not eat, drink or smoke. Provide adequate ventilation. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Avoid release to the environment. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities Store locked up. Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Components	Type	Value
CADMIUM NITRATE (CAS 10022-68-1)	TWA	0.005 mg/m ³
LEAD NITRATE (CAS 10099-74-8)	TWA	0.05 mg/m ³

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
ANTIMONY OXIDE (CAS 1309-64-4)	PEL	0.5 mg/m ³	
MOLYBDENUM TRIOXIDE (CAS 1313-27-5)	PEL	15 mg/m ³	Total dust.
NICKEL NITRATE, HEXAHYDRATE (CAS 13478-00-7)	PEL	1 mg/m ³	
NITRIC ACID (CAS 7697-37-2)	PEL	5 mg/m ³	
SELENIUM DIOXIDE (CAS 7446-08-4)	PEL	2 ppm 0.2 mg/m ³	
SILVER NITRATE (CAS 7761-88-8)	PEL	0.01 mg/m ³	
THALLIC OXIDE (CAS 1314-32-5)	PEL	0.1 mg/m ³	

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
VANADIUM PENTOXIDE (CAS 1314-62-1)	Ceiling	0.5 mg/m3	Respirable dust.
		0.1 mg/m3	Fume.

US. OSHA Table Z-2 (29 CFR 1910.1000)

Components	Type	Value	
HYDROGEN FLUORIDE (CAS 7664-39-3)	TWA	3 ppm	

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
ALUMINUM NITRATE, NONAHYDRATE (CAS 7784-27-2)	TWA	1 mg/m3	Respirable fraction.
ANTIMONY OXIDE (CAS 1309-64-4)	TWA	0.5 mg/m3	
CADMIUM NITRATE (CAS 10022-68-1)	TWA	0.01 mg/m3	
COBALT NITRATE (CAS 10026-22-9)	TWA	0.002 mg/m3	Respirable fraction.
		0.02 mg/m3	
CUPRIC NITRATE, HYDRATE (CAS 19004-19-4)	TWA	1 mg/m3	Dust and mist.
		0.2 mg/m3	Fume.
FERRIC NITRATE, NONAHYDRATE (CAS 7782-61-8)	TWA	1 mg/m3	
HYDROGEN FLUORIDE (CAS 7664-39-3)	Ceiling	2 ppm	
	TWA	0.5 ppm	
LEAD NITRATE (CAS 10099-74-8)	TWA	0.05 mg/m3	
MOLYBDENUM TRIOXIDE (CAS 1313-27-5)	TWA	3 mg/m3	Respirable fraction.
		10 mg/m3	Inhalable fraction.
NICKEL NITRATE, HEXAHYDRATE (CAS 13478-00-7)	TWA	0.1 mg/m3	Inhalable fraction.
NITRIC ACID (CAS 7697-37-2)	STEL	4 ppm	
	TWA	2 ppm	
SELENIUM DIOXIDE (CAS 7446-08-4)	TWA	0.2 mg/m3	
SILVER NITRATE (CAS 7761-88-8)	TWA	0.01 mg/m3	
THALLIC OXIDE (CAS 1314-32-5)	TWA	0.02 mg/m3	Inhalable fraction.
VANADIUM PENTOXIDE (CAS 1314-62-1)	TWA	0.05 mg/m3	Inhalable fraction.

U.S. - NIOSH

Components	Type	Value	Form
CUPRIC NITRATE, HYDRATE (CAS 19004-19-4)	REL	1 mg/m3	Dust and mist.

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
ALUMINUM NITRATE, NONAHYDRATE (CAS 7784-27-2)	TWA	2 mg/m3	
ANTIMONY OXIDE (CAS 1309-64-4)	TWA	0.5 mg/m3	
BARIUM NITRATE (CAS 10022-31-8)	TWA	0.5 mg/m3	
CUPRIC NITRATE, HYDRATE (CAS 19004-19-4)	TWA	1 mg/m3	Dust and mist.

US. NIOSH: Pocket Guide to Chemical Hazards Components

Components	Type	Value	Form
FERRIC NITRATE, NONAHYDRATE (CAS 7782-61-8)	TWA	1 mg/m3	
HYDROGEN FLUORIDE (CAS 7664-39-3)	Ceiling	5 mg/m3	
	TWA	6 ppm 2.5 mg/m3	
NICKEL NITRATE, HEXAHYDRATE (CAS 13478-00-7)	TWA	3 ppm 0.015 mg/m3	
NITRIC ACID (CAS 7697-37-2)	STEL	10 mg/m3	
	TWA	4 ppm 5 mg/m3	
SELENIUM DIOXIDE (CAS 7446-08-4)	TWA	2 ppm 0.2 mg/m3	
SILVER NITRATE (CAS 7761-88-8)	TWA	0.01 mg/m3	Dust.
THALLIC OXIDE (CAS 1314-32-5)	TWA	0.1 mg/m3	
VANADIUM PENTOXIDE (CAS 1314-62-1)	Ceiling	0.05 mg/m3	Dust.
		0.05 mg/m3	Fume.

Biological limit values

ACGIH Biological Exposure Indices Components

Components	Value	Determinant	Specimen	Sampling Time
CADMIUM NITRATE (CAS 10022-68-1)	5 µg/g	Cadmium	Creatinine in urine	*
	5 µg/l	Cadmium	Blood	*
COBALT NITRATE (CAS 10026-22-9)	15 µg/l	Cobalt	Urine	*
	1 µg/l	Cobalt	Blood	*
LEAD NITRATE (CAS 10099-74-8)	300 µg/l	Lead	Blood	*

* - For sampling details, please see the source document.

Exposure guidelines

US - California OELs: Skin designation

HYDROGEN FLUORIDE (CAS 7664-39-3) Can be absorbed through the skin.
 THALLIC OXIDE (CAS 1314-32-5) Can be absorbed through the skin.

US - Minnesota Haz Subs: Skin designation applies

THALLIC OXIDE (CAS 1314-32-5) Skin designation applies.

US - Tennessee OELs: Skin designation

THALLIC OXIDE (CAS 1314-32-5) Can be absorbed through the skin.

US ACGIH Threshold Limit Values: Skin designation

HYDROGEN FLUORIDE (CAS 7664-39-3) Can be absorbed through the skin.
 THALLIC OXIDE (CAS 1314-32-5) Can be absorbed through the skin.

US NIOSH Pocket Guide to Chemical Hazards: Skin designation

THALLIC OXIDE (CAS 1314-32-5) Can be absorbed through the skin.

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

THALLIC OXIDE (CAS 1314-32-5) Can be absorbed through the skin.

Appropriate engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles).

Skin protection

Hand protection Wear appropriate chemical resistant gloves.

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Other	Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.
Respiratory protection	If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Chemical respirator with acid gas cartridge.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	Keep away from food and drink. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance

Physical state	Liquid.
Form	Liquid.
Color	Light yellow.
Odor	Odorless.
Odor threshold	Not available.
pH	1 estimated
Melting point/freezing point	32 °F (0 °C) estimated
Initial boiling point and boiling range	212 °F (100 °C) estimated
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Miscible.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Density	1.04 g/cm ³ estimated
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
Percent volatile	> 95 %
Specific gravity	1.04 estimated

10. Stability and reactivity

Reactivity	This product may react with reducing agents.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Contact with incompatible materials. Do not mix with other chemicals.
Incompatible materials	Bases. Reducing agents.

Hazardous decomposition products May include oxides of nitrogen.

11. Toxicological information

Information on likely routes of exposure

Inhalation May cause damage to organs through prolonged or repeated exposure by inhalation. May cause irritation to the respiratory system.

Skin contact Causes severe skin burns.

Eye contact Causes serious eye damage.

Ingestion Causes digestive tract burns. Harmful if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.

Information on toxicological effects

Acute toxicity Harmful if swallowed.

Components	Species	Test Results
ALUMINUM NITRATE, NONAHYDRATE (CAS 7784-27-2)		
Acute		
Oral		
LD50	Mouse	286 mg/kg
		3.98 g/kg
	Rat	261 mg/kg
Other		
LD50	Mouse	37 mg/kg
	Rat	37 mg/kg
ANTIMONY OXIDE (CAS 1309-64-4)		
Acute		
Oral		
LD50	Rat	> 34600 mg/kg
		> 20000 mg/kg
		> 20 g/kg
Other		
LD50	Rabbit	> 2000 mg/kg
BARIUM NITRATE (CAS 10022-31-8)		
Acute		
Oral		
LD50	Rat	355 mg/kg
Other		
LD50	Mouse	20.1 mg/kg
		8.49 mg/kg
LDL0	Mouse	8.5 mg/kg
CADMIUM NITRATE (CAS 10022-68-1)		
Acute		
Oral		
LD50	Mouse	100 mg/kg
	Rat	300 mg/kg
COBALT NITRATE (CAS 10026-22-9)		
Oral		
LD50	Rat	434 mg/kg
Acute		
Oral		
LD	Rabbit	250 mg/kg
LD50	Rat	434 mg/kg

Components	Species	Test Results
Other		
LD	Rabbit	75 mg/kg
CUPRIC NITRATE, HYDRATE (CAS 19004-19-4)		
Acute		
Oral		
LD50	Rat	940 mg/kg
FERRIC NITRATE, NONAHYDRATE (CAS 7782-61-8)		
Acute		
Oral		
LD50	Rat	3250 mg/kg
HYDROGEN FLUORIDE (CAS 7664-39-3)		
Acute		
Inhalation		
LC50	Guinea pig	3.54 mg/l, 15 Minutes
	Monkey	1780 mg/l, 1 Hours
	Mouse	500 mg/l, 1 Hours
	Rat	1278 mg/l, 1 Hours
LEAD NITRATE (CAS 10099-74-8)		
Acute		
Other		
LD50	Rat	93 mg/kg
MAGNESIUM NITRATE, HEXAHYDRATE (CAS 13446-18-9)		
Acute		
Oral		
LD50	Rat	5440 mg/kg
MOLYBDENUM TRIOXIDE (CAS 1313-27-5)		
Acute		
Inhalation		
LC50	Rat	> 5840 mg/m3 4H
Oral		
LD50	Rat	2689 mg/kg
Chronic		
Oral		
LD50	Rat	125 mg/kg (long term feeding study)
		83 mg/kg (long term feeding study)
NICKEL NITRATE, HEXAHYDRATE (CAS 13478-00-7)		
Acute		
Oral		
LD50	Rat	1620 mg/kg
NITRIC ACID (CAS 7697-37-2)		
Acute		
Inhalation		
LC50	Mouse	244 mg/l, 30 Minutes
		67 mg/l, 4 Hours
	Rat	334 mg/l, 30 Minutes
		244 mg/l, 30 Minutes
		138 mg/l, 30 Minutes
		65 mg/l, 4 Hours
SILVER NITRATE (CAS 7761-88-8)		
Acute		
Oral		
LD50	Mouse	50 mg/kg

Components	Species	Test Results
Other		
LD50	Mouse	23.783 mg/kg 13.9 mg/kg
VANADIUM PENTOXIDE (CAS 1314-62-1)		
Acute		
Inhalation		
LC50	Rat	0.07 mg/l, 1 Hours
Oral		
LD50	Mouse	23 mg/kg
	Rabbit	64 mg/kg
Other		
LD50	Mouse	10 mg/kg
	Rat	14 mg/kg

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation	Causes severe skin burns and eye damage.
Serious eye damage/eye irritation	Causes serious eye damage.
Respiratory or skin sensitization	
Respiratory sensitization	Not a respiratory sensitizer.
Skin sensitization	This product is not expected to cause skin sensitization.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	Not classifiable as to carcinogenicity to humans.
IARC Monographs. Overall Evaluation of Carcinogenicity	
ANTIMONY OXIDE (CAS 1309-64-4)	2B Possibly carcinogenic to humans.
CADMIUM NITRATE (CAS 10022-68-1)	1 Carcinogenic to humans.
LEAD NITRATE (CAS 10099-74-8)	2A Probably carcinogenic to humans.
NICKEL NITRATE, HEXAHYDRATE (CAS 13478-00-7)	1 Carcinogenic to humans.
SELENIUM DIOXIDE (CAS 7446-08-4)	3 Not classifiable as to carcinogenicity to humans.
VANADIUM PENTOXIDE (CAS 1314-62-1)	2B Possibly carcinogenic to humans.
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)	
CADMIUM NITRATE (CAS 10022-68-1)	Cancer
US. National Toxicology Program (NTP) Report on Carcinogens	
CADMIUM NITRATE (CAS 10022-68-1)	Known To Be Human Carcinogen.
LEAD NITRATE (CAS 10099-74-8)	Reasonably Anticipated to be a Human Carcinogen.
NICKEL NITRATE, HEXAHYDRATE (CAS 13478-00-7)	Known To Be Human Carcinogen.
Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Not classified.
Specific target organ toxicity - repeated exposure	May cause damage to organs through prolonged or repeated exposure.
Aspiration hazard	Not an aspiration hazard.
Chronic effects	May cause damage to organs through prolonged or repeated exposure. Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity	Harmful to aquatic life with long lasting effects. Because of the low pH of this product, it would be expected to produce significant ecotoxicity upon exposure to aquatic organisms and aquatic systems.
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Product	Species	Test Results	
ENVIRONMENTAL CALIBRATION STANDARD			
Aquatic			
Crustacea	EC50	Daphnia	1899.9883 mg/l, 48 hours estimated
Fish	LC50	Fish	9613.4404 mg/l, 96 hours estimated

Components	Species	Test Results
ALUMINUM NITRATE, NONAHYDRATE (CAS 7784-27-2)		
Aquatic		
Fish	LC50	Fathead minnow (<i>Pimephales promelas</i>) 3.3 - 5.5 mg/l, 96 hours
ANTIMONY OXIDE (CAS 1309-64-4)		
Aquatic		
Crustacea	EC50	Water flea (<i>Daphnia magna</i>) 361.5 - 496 mg/l, 48 hours
Fish	LC50	Fathead minnow (<i>Pimephales promelas</i>) > 80 mg/l, 96 hours
CADMIUM NITRATE (CAS 10022-68-1)		
Aquatic		
Crustacea	EC50	Water flea (<i>Moina dubia</i>) 0.056 - 0.145 mg/l, 48 hours
Fish	LC50	Fathead minnow (<i>Pimephales promelas</i>) 0.053 - 0.068 mg/l, 96 hours
COBALT NITRATE (CAS 10026-22-9)		
Aquatic		
Crustacea	EC50	Brine shrimp (<i>Artemia salina</i>) 10.233 mg/l, 48 hours
Fish	LC50	Goldfish (<i>Carassius auratus</i>) 66.8 mg/l, 96 hours
CUPRIC NITRATE, HYDRATE (CAS 19004-19-4)		
Aquatic		
Crustacea	EC50	Water flea (<i>Moina dubia</i>) 0.037 - 0.044 mg/l, 48 hours
Fish	LC50	Winter flounder (<i>Pleuronectes americanus</i>) 0.057 - 0.1061 mg/l, 96 hours
FERRIC NITRATE, NONAHYDRATE (CAS 7782-61-8)		
Aquatic		
Other	LC50	Nematode (<i>Caenorhabditis elegans</i>) 0.0003 mg/l, 24 hours
LEAD NITRATE (CAS 10099-74-8)		
Aquatic		
Crustacea	EC50	Tubificid worm (<i>Tubifex tubifex</i>) 0.107 - 0.184 mg/l, 48 hours
Fish	LC50	Rainbow trout, donaldson trout (<i>Oncorhynchus mykiss</i>) 1 mg/l, 96 hours
MOLYBDENUM TRIOXIDE (CAS 1313-27-5)		
Aquatic		
Fish	LC50	Fathead minnow (<i>Pimephales promelas</i>) 70 mg/l, 96 hours
NICKEL NITRATE, HEXAHYDRATE (CAS 13478-00-7)		
Aquatic		
Crustacea	EC50	Brine shrimp (<i>Artemia salina</i>) 0.466 mg/l, 48 hours
Fish	LC50	Striped bass (<i>Morone saxatilis</i>) 6.2 mg/l, 96 hours
NITRIC ACID (CAS 7697-37-2)		
Aquatic		
Crustacea	LC50	Cockle (<i>Cerastoderma edule</i>) 330 - 1000 mg/l, 48 hours
		Green or European shore crab (<i>Carcinus maenas</i>) 180 mg/l, 48 hours
Fish	LC50	Starfish (<i>Asterias rubens</i>) 100 - 330 mg/l, 48 hours
SELENIUM DIOXIDE (CAS 7446-08-4)		
Aquatic		
Fish	LC50	Giant gourami (<i>Colisa fasciata</i>) 2.65 mg/l, 96 hours
SILVER NITRATE (CAS 7761-88-8)		
Aquatic		
Crustacea	EC50	Water flea (<i>Daphnia magna</i>) 0.0009 - 0.0012 mg/l, 48 hours
Fish	LC50	Fathead minnow (<i>Pimephales promelas</i>) 0.0039 - 0.0048 mg/l, 96 hours

Components	Species	Test Results
VANADIUM PENTOXIDE (CAS 1314-62-1)		
Aquatic		
Fish	LC50	Fathead minnow (Pimephales promelas) 1.3 - 2.88 mg/l, 96 hours

* Estimates for product may be based on additional component data not shown.

Persistence and degradability

Bioaccumulative potential No data available.

Mobility in soil No data available.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

US RCRA Hazardous Waste P List: Reference

THALLIC OXIDE (CAS 1314-32-5)	P113
VANADIUM PENTOXIDE (CAS 1314-62-1)	P120

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

UN number	UN3264
UN proper shipping name	Corrosive liquid, acidic, inorganic, n.o.s. (NITRIC ACID RQ = 29586 LBS)
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Label(s)	8
Packing group	II
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Special provisions	B2, IB2, T11, TP2, TP27
Packaging exceptions	154
Packaging non bulk	202
Packaging bulk	242

IATA

UN number	UN3264
UN proper shipping name	Corrosive liquid, acidic, inorganic, n.o.s. (NITRIC ACID)
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	II
Environmental hazards	No.
ERG Code	8L
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Other information	
Passenger and cargo aircraft	Allowed with restrictions.
Cargo aircraft only	Allowed with restrictions.

IMDG

UN number	UN3264
UN proper shipping name	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID)

Material name: ENVIRONMENTAL CALIBRATION STANDARD

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Transport hazard class(es)

Class 8
Subsidiary risk -
Packing group II

Environmental hazards

Marine pollutant No.

EmS F-A, S-B

Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

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

DOT**IATA; IMDG****15. Regulatory information**

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

ANTIMONY OXIDE (CAS 1309-64-4)	Listed.
CADMIUM NITRATE (CAS 10022-68-1)	Listed.
COBALT NITRATE (CAS 10026-22-9)	Listed.
FERRIC NITRATE, NONAHYDRATE (CAS 7782-61-8)	Listed.
HYDROGEN FLUORIDE (CAS 7664-39-3)	Listed.
LEAD NITRATE (CAS 10099-74-8)	Listed.
NICKEL NITRATE, HEXAHYDRATE (CAS 13478-00-7)	Listed.
NITRIC ACID (CAS 7697-37-2)	Listed.
SELENIUM DIOXIDE (CAS 7446-08-4)	Listed.
SILVER NITRATE (CAS 7761-88-8)	Listed.
THALLIC OXIDE (CAS 1314-32-5)	Listed.
VANADIUM PENTOXIDE (CAS 1314-62-1)	Listed.

SARA 304 Emergency release notification

HYDROGEN FLUORIDE (CAS 7664-39-3)	100 LBS
NITRIC ACID (CAS 7697-37-2)	1000 LBS
VANADIUM PENTOXIDE (CAS 1314-62-1)	1000 LBS

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

CADMIUM NITRATE (CAS 10022-68-1)	Cancer
LEAD NITRATE (CAS 10099-74-8)	Reproductive toxicity
CADMIUM NITRATE (CAS 10022-68-1)	Lung
LEAD NITRATE (CAS 10099-74-8)	Central nervous system
CADMIUM NITRATE (CAS 10022-68-1)	Kidney
LEAD NITRATE (CAS 10099-74-8)	Kidney

CADMIUM NITRATE (CAS 10022-68-1)
LEAD NITRATE (CAS 10099-74-8)

Acute toxicity
Blood
Acute toxicity

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
Immediate Hazard - Yes
Delayed Hazard - Yes
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Chemical name	CAS number	Reportable quantity (pounds)	Threshold planning quantity (pounds)	Threshold planning quantity, lower value (pounds)	Threshold planning quantity, upper value (pounds)
NITRIC ACID	7697-37-2	1000	1000		
HYDROGEN FLUORIDE	7664-39-3	100	100		
VANADIUM PENTOXIDE	1314-62-1	1000		100	10000

SARA 311/312 Hazardous chemical
No

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
MAGNESIUM NITRATE, HEXAHYDRATE	13446-18-9	1.05
NITRIC ACID	7697-37-2	3 - < 5

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

ANTIMONY OXIDE (CAS 1309-64-4)
CADMIUM NITRATE (CAS 10022-68-1)
COBALT NITRATE (CAS 10026-22-9)
HYDROGEN FLUORIDE (CAS 7664-39-3)
LEAD NITRATE (CAS 10099-74-8)
NICKEL NITRATE, HEXAHYDRATE (CAS 13478-00-7)
SELENIUM DIOXIDE (CAS 7446-08-4)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

HYDROGEN FLUORIDE (CAS 7664-39-3)
NITRIC ACID (CAS 7697-37-2)

Safe Drinking Water Act (SDWA)
Not regulated.

US state regulations

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance

ANTIMONY OXIDE (CAS 1309-64-4) Listed: October 1, 1990
CADMIUM NITRATE (CAS 10022-68-1) Listed: October 1, 1987
LEAD NITRATE (CAS 10099-74-8) Listed: October 1, 1992
NICKEL NITRATE, HEXAHYDRATE (CAS 13478-00-7) Listed: May 7, 2004
VANADIUM PENTOXIDE (CAS 1314-62-1) Listed: February 11, 2005

US - California Proposition 65 - CRT: Listed date/Developmental toxin

CADMIUM NITRATE (CAS 10022-68-1) Listed: May 1, 1997

US - California Proposition 65 - CRT: Listed date/Male reproductive toxin

CADMIUM NITRATE (CAS 10022-68-1) Listed: May 1, 1997

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

ANTIMONY OXIDE (CAS 1309-64-4)
CADMIUM NITRATE (CAS 10022-68-1)
HYDROGEN FLUORIDE (CAS 7664-39-3)
LEAD NITRATE (CAS 10099-74-8)
MAGNESIUM NITRATE, HEXAHYDRATE (CAS 13446-18-9)
NITRIC ACID (CAS 7697-37-2)
VANADIUM PENTOXIDE (CAS 1314-62-1)

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	No
Canada	Non-Domestic Substances List (NDSL)	Yes
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	No
New Zealand	New Zealand Inventory	No
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date July-20-2017

Version # 01

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