



**Environmental Calibration Standard 25 components; Ca 1000ug/ml ; Fe 1000ug/ml ; K 1000ug/ml ; Mg 1000ug/ml ; Na 1000ug/ml ; Ag 10ug/ml ; Al 10ug/ml ; As 10ug/ml ; Ba 10ug/ml ; Be 10ug/ml ; Cd 10ug/ml ; Co 10ug/ml ; Cr 10ug/ml ; Cu 10ug/ml ; Mn 10ug/ml ; Mo 10ug/ml ; Ni 10ug/ml ; Pb 10ug/ml ; Sb 10ug/ml ; Se 10ug/ml ; Ti 10ug/ml ; V 10ug/ml ; Zn 10ug/ml ; Th 10ug/ml ; U 10ug/ml in HNO3 10% /tr.HF Equivalent to Agilent Ref: 5183-4688**

**Safety Data Sheet**

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 09/10/2016

Revision date: 09/10/2016

Version: 1.1

## **SECTION 1: Identification**

### **1.1. Identification**

Product form	: Mixture
Name	: Environmental Calibration Standard 25 components; Ca 1000ug/ml ; Fe 1000ug/ml ; K 1000ug/ml ; Mg 1000ug/ml ; Na 1000ug/ml ; Ag 10ug/ml ; Al 10ug/ml ; As 10ug/ml ; Ba 10ug/ml ; Be 10ug/ml ; Cd 10ug/ml ; Co 10ug/ml ; Cr 10ug/ml ; Cu 10ug/ml ; Mn 10ug/ml ; Mo 10ug/ml ; Ni 10ug/ml ; Pb 10ug/ml ; Sb 10ug/ml ; Se 10ug/ml ; Ti 10ug/ml ; V 10ug/ml ; Zn 10ug/ml ; Th 10ug/ml ; U 10ug/ml in HNO3 10% /tr.HF Equivalent to Agilent Ref: 5183-4688
Product code	: EQ0001

### **1.2. Relevant identified uses of the substance or mixture and uses advised against**

Use of the substance/mixture	: Certified reference material for laboratory use
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### **1.3. Details of the supplier of the safety data sheet**

**Spectracer UK Ltd.**

Second Floor,  
27 Gloucester Place,  
London,  
W1U 8HU,  
United Kingdom.

Tel: +44 (0) 207 193 9114

Fax: +44 (0) 203 432 4686

Email: [contact@spectracer.co.uk](mailto:contact@spectracer.co.uk)

Web: [www.spectracer.com](http://www.spectracer.com)

### **1.4. Emergency telephone number**

Emergency number	: Tel: +44(0)1933445260 Option 1. Language: English only. For Chemical Emergencies Only Llewellyn (Safety Advisors) Europe Ltd
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## **SECTION 2: Hazard(s) identification**

### **2.1. Classification of the substance or mixture**

#### **GHS-US classification**

Corrosive to metals	H290
Category 1	
Skin corrosion/irritation	H314
Category 1A	
Hazardous to the aquatic environment - Acute Hazard Category 3	H402

Full text of H statements : see section 16

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**Safety Data Sheet**

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**2.2. Label elements**

**GHS-US labeling**

Hazard pictograms (GHS-US) :



GHS05

Signal word (GHS-US) :

Danger

Hazard statements (GHS-US) :

H290 - May be corrosive to metals  
H314 - Causes severe skin burns and eye damage  
H402 - Harmful to aquatic life

Precautionary statements (GHS-US) :

P234 - Keep only in original container  
P260 - Do not breathe dust/fume/gas/mist/vapors/spray  
P273 - Avoid release to the environment  
P280 - Wear protective gloves/protective clothing/eye protection/face protection  
P301+P330+P331 - If swallowed: rinse mouth. Do NOT induce vomiting  
P303+P361+P353 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower  
P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing  
P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
P310 - Immediately call a poison center/doctor/...  
P363 - Wash contaminated clothing before reuse  
P390 - Absorb spillage to prevent material damage  
P405 - Store locked up  
P501 - Dispose of contents/container to ..

**2.3. Other hazards**

No additional information available

**2.4. Unknown acute toxicity (GHS US)**

Not applicable

**SECTION 3: Composition/Information on ingredients**

**3.1. Substance**

Not applicable

**3.2. Mixture**

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**Safety Data Sheet**

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Name	Product identifier	%	GHS-US classification
nitric acid	(CAS No) 7697-37-2	5 - 15	Ox. Liq. 3, H272 Met. Corr. 1, H290 Skin Corr. 1A, H314
iron(III) nitrate	(CAS No) 10421-48-4	0.1 - 1	Skin Irrit. 2, H315 Eye Irrit. 2A, H319 STOT SE 3, H335
hydrofluoric acid	(CAS No) 7664-39-3	0.1 - 1	Met. Corr. 1, H290 Acute Tox. 2 (Oral), H300 Acute Tox. 1 (Dermal), H310 Acute Tox. 2 (Inhalation), H330 Skin Corr. 1A, H314
beryllium nitrate	(CAS No) 13597-99-4	< 0.1	Acute Tox. 3 (Oral), H301 Skin Irrit. 2, H315 Eye Irrit. 2A, H319 Skin Sens. 1, H317 Carc. 1B, H350 STOT SE 3, H335 STOT RE 1, H372 Aquatic Acute 3, H402 Aquatic Chronic 2, H411
chromium(III) nitrate	(CAS No) 13548-38-4	< 0.1	Skin Sens. 1, H317
manganese(II)nitrate	(CAS No) 10377-66-9	< 0.1	Skin Irrit. 2, H315 Eye Irrit. 2A, H319
cobalt dinitrate	(CAS No) 10141-05-6	< 0.1	Resp. Sens. 1, H334 Skin Sens. 1, H317 Muta. 2, H341 Carc. 2, H351 Repr. 1B, H360 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
nickel nitrate	(CAS No) 13138-45-9	< 0.1	Ox. Sol. 2, H272 Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Inhalation), H332 Skin Irrit. 2, H315 Eye Dam. 1, H318 Resp. Sens. 1, H334 Skin Sens. 1, H317 Muta. 2, H341 Carc. 1A, H350 Repr. 1B, H360 STOT RE 1, H372 Aquatic Acute 3, H402 Aquatic Chronic 3, H412
cadmium nitrate	(CAS No) 10325-94-7	< 0.1	Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Dermal), H312 Acute Tox. 4 (Inhalation), H332 Carc. 1A, H350 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
hexafluoroantimonic acid	(CAS No) 16950-06-4	< 0.1	Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Inhalation), H332 Skin Corr. 1B, H314 Aquatic Chronic 2, H411
arsenic acid	(CAS No) 7778-39-4	< 0.1	Acute Tox. 2 (Oral), H300 Carc. 1A, H350 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
barium nitrate	(CAS No) 10022-31-8	< 0.1	Acute Tox. 4 (Oral), H302

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**Safety Data Sheet**

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Name	Product identifier	%	GHS-US classification
silver nitrate	(CAS No) 7761-88-8	< 0.1	Ox. Sol. 2, H272 Acute Tox. 4 (Oral), H302 Skin Corr. 1B, H314 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
lead nitrate	(CAS No) 10099-74-8	< 0.1	Carc. 1B, H350 Repr. 1A, H360 STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
selenious acid	(CAS No) 7783-00-8	< 0.1	Acute Tox. 3 (Oral), H301 Acute Tox. 3 (Inhalation), H331 STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
thallium(I)nitrate	(CAS No) 10102-45-1	< 0.1	Acute Tox. 2 (Oral), H300 STOT RE 2, H373 Aquatic Acute 2, H401 Aquatic Chronic 2, H411

Full text of hazard classes and H-statements : see section 16

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

First-aid measures general : Call a physician immediately.

First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing.

First-aid measures after skin contact : Rinse skin with water/shower. Remove/Take off immediately all contaminated clothing. Call a physician immediately.

First-aid measures after eye contact : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician immediately.

First-aid measures after ingestion : Rinse mouth. Do not induce vomiting. Call a physician immediately.

### 4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries after skin contact : Burns.

Symptoms/injuries after eye contact : Serious damage to eyes.

Symptoms/injuries after ingestion : Burns.

### 4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

Suitable extinguishing media : Water spray. Dry powder. Foam. Carbon dioxide.

### 5.2. Special hazards arising from the substance or mixture

Reactivity : The product is non-reactive under normal conditions of use, storage and transport.

### 5.3. Advice for firefighters

Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

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**Safety Data Sheet**

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

**SECTION 6: Accidental release measures**

**6.1. Personal precautions, protective equipment and emergency procedures**

**6.1.1. For non-emergency personnel**

Emergency procedures : Ventilate spillage area. Avoid contact with skin and eyes. Do not breathe dust/fume/gas/mist/vapors/spray.

**6.1.2. For emergency responders**

Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

**6.2. Environmental precautions**

Avoid release to the environment.

**6.3. Methods and material for containment and cleaning up**

Methods for cleaning up : Take up liquid spill into absorbent material.

Other information : Dispose of materials or solid residues at an authorized site.

**6.4. Reference to other sections**

For further information refer to section 13.

**SECTION 7: Handling and storage**

**7.1. Precautions for safe handling**

Precautions for safe handling : Ensure good ventilation of the work station. Avoid contact with skin and eyes. Do not breathe dust/fume/gas/mist/vapors/spray. Wear personal protective equipment.

Hygiene measures : Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

**7.2. Conditions for safe storage, including any incompatibilities**

Storage conditions : Store in corrosive resistant container with a resistant inner liner. Keep only in original container. Store locked up. Store in a well-ventilated place. Keep cool.

Incompatible materials : Metals.

**SECTION 8: Exposure controls/personal protection**

**8.1. Control parameters**

<b>nitric acid (7697-37-2)</b>		
ACGIH	ACGIH TWA (ppm)	2 ppm
ACGIH	ACGIH STEL (ppm)	4 ppm
ACGIH	Remark (ACGIH)	URT & eye irr; dental erosion
OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	5 mg/m <sup>3</sup>
OSHA	OSHA PEL (TWA) (ppm)	2 ppm

**hydrofluoric acid (7664-39-3)**

ACGIH	ACGIH TWA (ppm)	0.50 ppm
ACGIH	ACGIH Ceiling (ppm)	2 ppm
ACGIH	Remark (ACGIH)	URT, LRT, skin, & eye irr
OSHA	Remark (OSHA)	(2) See Table Z-2.

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**Safety Data Sheet**

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

<b>iron(III) nitrate (10421-48-4)</b>		
ACGIH	ACGIH TWA (mg/m <sup>3</sup> )	1 mg/m <sup>3</sup> (Iron salts, soluble, as Fe; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value)
Not applicable		
<b>silver nitrate (7761-88-8)</b>		
ACGIH	ACGIH TWA (mg/m <sup>3</sup> )	0.01 mg/m <sup>3</sup> (Silver Soluble compounds, as Ag; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value)
Not applicable		
<b>arsenic acid (7778-39-4)</b>		
ACGIH	ACGIH TWA (mg/m <sup>3</sup> )	0.01 mg/m <sup>3</sup> (Arsenic, inorganic compounds (except Arsine), as As; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value)
Not applicable		
<b>barium nitrate (10022-31-8)</b>		
ACGIH	ACGIH TWA (mg/m <sup>3</sup> )	0.5 mg/m <sup>3</sup> (Barium, soluble compounds, as Ba; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value)
OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	0.5 mg/m <sup>3</sup>
<b>beryllium nitrate (13597-99-4)</b>		
ACGIH	ACGIH TWA (mg/m <sup>3</sup> )	0.00005 mg/m <sup>3</sup>
ACGIH	Remark (ACGIH)	Beryllium sens; chronic beryllium; Skin; DSEN; RSEN; A1
OSHA	Remark (OSHA)	(2) See Table Z-2.
<b>cadmium nitrate (10325-94-7)</b>		
ACGIH	ACGIH TWA (mg/m <sup>3</sup> )	0.01 mg/m <sup>3</sup> (Cadmium, compounds, as Cd; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value; Cadmium, compounds, as Cd; 0.002 mg/m <sup>3</sup> ; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value; Respirable fraction)
Not applicable		
<b>cobalt dinitrate (10141-05-6)</b>		
ACGIH	ACGIH TWA (mg/m <sup>3</sup> )	0.02 mg/m <sup>3</sup> (Cobalt, inorganic compounds, as Co; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value)
Not applicable		
<b>chromium(III) nitrate (13548-38-4)</b>		
ACGIH	ACGIH TWA (mg/m <sup>3</sup> )	0.5 mg/m <sup>3</sup> (Chromium,inorganic Cr III compounds; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value)
Not applicable		
<b>manganese(II)nitrate (10377-66-9)</b>		
ACGIH	ACGIH TWA (mg/m <sup>3</sup> )	0.02 mg/m <sup>3</sup>
ACGIH	Remark (ACGIH)	CNS impair; A4

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**Safety Data Sheet**

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

<b>nickel nitrate (13138-45-9)</b>		
ACGIH	ACGIH TWA (mg/m <sup>3</sup> )	0.1 mg/m <sup>3</sup> (Nickel, Soluble inorganic compounds (NOS), as Ni; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value; Inhalable fraction)
Not applicable		
<b>lead nitrate (10099-74-8)</b>		
ACGIH	ACGIH TWA (mg/m <sup>3</sup> )	0.05 mg/m <sup>3</sup> (Lead, inorganic compounds, as Pb; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value)
ACGIH	Remark (ACGIH)	CNS & PNS impair
<b>hexafluoroantimonic acid (16950-06-4)</b>		
ACGIH	ACGIH TWA (mg/m <sup>3</sup> )	0.5 mg/m <sup>3</sup>
ACGIH	Remark (ACGIH)	Skin & URT irr
OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	0.5 mg/m <sup>3</sup>
<b>selenious acid (7783-00-8)</b>		
ACGIH	ACGIH TWA (mg/m <sup>3</sup> )	0.2 mg/m <sup>3</sup> (Selenium compounds, as Se; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value)
ACGIH	Remark (ACGIH)	78.96 Eye & URT irr
OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	0.2 mg/m <sup>3</sup>
<b>thallium(I)nitrate (10102-45-1)</b>		
ACGIH	ACGIH TWA (mg/m <sup>3</sup> )	0.02 mg/m <sup>3</sup>
ACGIH	Remark (ACGIH)	dam; peripheral neuropathy
OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	0.1 mg/m <sup>3</sup>

**8.2. Exposure controls**

Appropriate engineering controls

: Ensure good ventilation of the work station.

Personal protective equipment

: Avoid all unnecessary exposure. Gloves. Safety glasses. Protective clothing.



Hand protection

: Protective gloves.

Eye protection

: Safety glasses.

Skin and body protection

: Wear suitable protective clothing.

Respiratory protection

: In case of insufficient ventilation, wear suitable respiratory equipment.

Environmental exposure controls

: Avoid release to the environment.

**SECTION 9: Physical and chemical properties**

**9.1. Information on basic physical and chemical properties**

Physical state

: Liquid

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**Safety Data Sheet**

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Color	: Mixture contains one or more component(s) which have the following colour(s): colorless to yellow On exposure to light: red-brown Colorless Light violet Colourless-white Colourless to white White Colourless to grey On exposure to light: dark grey to black White to light yellow Light red Light green Blue-green Colourless to light rose Green Colourless to light brown Colourless or white On exposure to air: turns dark White or colourless
Odor	: There may be no odour warning properties, odour is subjective and inadequate to warn of overexposure. Mixture contains one or more component(s) which have the following odour(s): irritating/pungent odor asphyxiating odor Odorless Mild odour No data available on odour
Odor threshold	: No data available
pH	: No data available
Melting point	: Not applicable
Freezing point	: No data available
Boiling point	: No data available
Flash point	: No data available
Relative evaporation rate (butyl acetate=1)	: No data available
Flammability (solid, gas)	: Not applicable.
Vapor pressure	: No data available
Relative vapor density at 20 °C	: No data available
Relative density	: 1.09
Solubility	: Miscible with water.
Log Pow	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosion limits	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available

**9.2. Other information**

No additional information available

**SECTION 10: Stability and reactivity**

**10.1. Reactivity**

The product is non-reactive under normal conditions of use, storage and transport.

**10.2. Chemical stability**

Stable under normal conditions.

**10.3. Possibility of hazardous reactions**

No dangerous reactions known under normal conditions of use.

**10.4. Conditions to avoid**

None under recommended storage and handling conditions (see section 7).

**10.5. Incompatible materials**

metals.

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**Safety Data Sheet**

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

**10.6. Hazardous decomposition products**

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

**SECTION 11: Toxicological information**

**11.1. Information on toxicological effects**

Acute toxicity : Not classified

<b>hydrofluoric acid (7664-39-3)</b>	
ATE US (oral)	5.000 mg/kg body weight
ATE US (dermal)	5.000 mg/kg body weight
ATE US (gases)	100.000 ppmV/4h
ATE US (vapors)	0.500 mg/l/4h
ATE US (dust, mist)	0.050 mg/l/4h
<b>silver nitrate (7761-88-8)</b>	
LD50 oral rat	1173 mg/kg (Rat)
ATE US (oral)	1173.000 mg/kg body weight
<b>arsenic acid (7778-39-4)</b>	
LD50 oral rat	48 mg/kg (Rat)
ATE US (oral)	48.000 mg/kg body weight
<b>barium nitrate (10022-31-8)</b>	
LD50 oral rat	355 mg/kg (Rat)
ATE US (oral)	355.000 mg/kg body weight
<b>beryllium nitrate (13597-99-4)</b>	
ATE US (oral)	100.000 mg/kg body weight
<b>cadmium nitrate (10325-94-7)</b>	
LD50 oral rat	300 mg/kg (Rat)
ATE US (oral)	300.000 mg/kg body weight
ATE US (dermal)	1100.000 mg/kg body weight
ATE US (gases)	4500.000 ppmV/4h
ATE US (vapors)	11.000 mg/l/4h
ATE US (dust, mist)	1.500 mg/l/4h
<b>chromium(III) nitrate (13548-38-4)</b>	
LD50 oral rat	3250 mg/kg (Rat)
ATE US (oral)	3250.000 mg/kg body weight
<b>nickel nitrate (13138-45-9)</b>	
ATE US (oral)	500.000 mg/kg body weight
ATE US (gases)	4500.000 ppmV/4h
ATE US (vapors)	11.000 mg/l/4h
ATE US (dust, mist)	1.500 mg/l/4h
<b>lead nitrate (10099-74-8)</b>	
LD50 oral rat	4665 mg/kg body weight (Rat; Equivalent or similar to OECD 401; Read-across; 5610 mg/kg bodyweight; Rat; Equivalent or similar to OECD 401; Read-across)
ATE US (oral)	4665.000 mg/kg body weight

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**Safety Data Sheet**

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

<b>hexafluoroantimonic acid (16950-06-4)</b>	
ATE US (oral)	500.000 mg/kg body weight
ATE US (gases)	4500.000 ppmV/4h
ATE US (vapors)	11.000 mg/l/4h
ATE US (dust, mist)	1.500 mg/l/4h
<b>selenious acid (7783-00-8)</b>	
ATE US (oral)	100.000 mg/kg body weight
ATE US (gases)	700.000 ppmV/4h
ATE US (vapors)	3.000 mg/l/4h
ATE US (dust, mist)	0.500 mg/l/4h
<b>thallium(I)nitrate (10102-45-1)</b>	
ATE US (oral)	5.000 mg/kg body weight
Skin corrosion/irritation	: Causes severe skin burns and eye damage.
Serious eye damage/irritation	: Not classified
Respiratory or skin sensitization	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
<b>arsenic acid (7778-39-4)</b>	
IARC group	2B - Possibly carcinogenic to humans
<b>beryllium nitrate (13597-99-4)</b>	
IARC group	1 - Carcinogenic to humans
<b>cadmium nitrate (10325-94-7)</b>	
IARC group	1 - Carcinogenic to humans
<b>cobalt dinitrate (10141-05-6)</b>	
IARC group	2B - Possibly carcinogenic to humans
<b>chromium(III) nitrate (13548-38-4)</b>	
IARC group	3 - Not classifiable
<b>lead nitrate (10099-74-8)</b>	
IARC group	2A - Probably carcinogenic to humans
<b>selenious acid (7783-00-8)</b>	
IARC group	3 - Not classifiable
Reproductive toxicity	: Not classified
Specific target organ toxicity (single exposure)	: Not classified
Specific target organ toxicity (repeated exposure)	: Not classified

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**Safety Data Sheet**

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Aspiration hazard : Not classified

Symptoms/injuries after skin contact : Burns.

Symptoms/injuries after eye contact : Serious damage to eyes.

Symptoms/injuries after ingestion : Burns.

**SECTION 12: Ecological information**

**12.1. Toxicity**

Ecology - general : Harmful to aquatic life.

**nitric acid (7697-37-2)**

EC50 Daphnia 1	180 mg/l (EC50; 48 h)
LC50 fish 2	72 ppm (LC50; 96 h)
Threshold limit algae 1	> 19 mg/l (EC0)

**hydrofluoric acid (7664-39-3)**

LC50 fish 1	107.5 mg/l (LC50; 96 h)
EC50 Daphnia 1	270 mg/l (EC50; 48 h)
Threshold limit algae 1	95 mg/l (EC0; 96 h)

**silver nitrate (7761-88-8)**

EC50 Daphnia 1	0.0006 mg/l (EC50; 48 h)
LC50 fish 2	0.006 mg/l (LC50; 96 h; <i>Salmo gairdneri</i> )

**arsenic acid (7778-39-4)**

LC50 fish 1	25.6 mg/l (LC50; 96 h)
EC50 Daphnia 1	0.93 mg/l (EC50; 672 h)
Threshold limit algae 1	< 0.002 mg/l (EC0)

**barium nitrate (10022-31-8)**

LC50 fish 1	> 1000 mg/l (LC50; 96 h)
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**beryllium nitrate (13597-99-4)**

LC50 fish 1	8 mg/l (LC50)
EC50 Daphnia 1	18 mg/l (EC50; 24 h)
Threshold limit algae 1	0.03 mg/l (EC0)

**cadmium nitrate (10325-94-7)**

EC50 Daphnia 1	0.04 mg/l (EC50; 48 h)
LC50 fish 2	0.055 mg/l (LC50; 48 h)

**cobalt dinitrate (10141-05-6)**

LC50 fish 1	0.490 mg/l (LC50; 672 h)
EC50 Daphnia 2	0.021 mg/l (EC50; 48 h)
Threshold limit algae 1	0.018 mg/l (EC50; 96 h)

**nickel nitrate (13138-45-9)**

LC50 fish 1	17.1 mg/l (LC50; 672 h)
Threshold limit algae 1	0.18 mg/l (EC50; 72 h)

**lead nitrate (10099-74-8)**

EC50 Daphnia 1	0.3 mg/l (LC50; 48 h)
LC50 fish 2	7.48 mg/l (TLm; 96 h)
Threshold limit algae 1	0.14 mg/l (EC50)

**Environmental Calibration Standard 25 components; Ca 1000ug/ml ; Fe 1000ug/ml ; K 1000ug/ml ; Mg 1000ug/ml ; Na 1000ug/ml ; Ag 10ug/ml ; Al 10ug/ml ; As 10ug/ml ; Ba 10ug/ml ; Be 10ug/ml ; Cd 10ug/ml ; Co 10ug/ml ; Cr 10ug/ml ; Cu 10ug/ml ; Mn 10ug/ml ; Mo 10ug/ml ; Ni 10ug/ml ; Pb 10ug/ml ; Sb 10ug/ml ; Se 10ug/ml ; Ti 10ug/ml ; V 10ug/ml ; Zn 10ug/ml ; Th 10ug/ml ; U 10ug/ml in HNO<sub>3</sub> 10% /tr.HF Equivalent to Agilent Ref: 5183-4688**

**Safety Data Sheet**

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

<b>selenious acid (7783-00-8)</b>	
LC50 fish 1	0.62 - 0.97 mg/l (LC50; 96 h; Pimephales promelas)
EC50 Daphnia 2	0.430 mg/l (EC50; 48 h)
<b>thallium(I)nitrate (10102-45-1)</b>	
LC50 fish 1	180 mg/l (LC50)
EC50 Daphnia 1	1.6 mg/l (EC50; 24 h)
<b>12.2. Persistence and degradability</b>	
<b>nitric acid (7697-37-2)</b>	
Persistence and degradability	Biodegradability: Not applicable.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
<b>hydrofluoric acid (7664-39-3)</b>	
Persistence and degradability	Biodegradability: Not applicable.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
<b>iron(III) nitrate (10421-48-4)</b>	
Persistence and degradability	Biodegradability: Not applicable.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
<b>silver nitrate (7761-88-8)</b>	
Persistence and degradability	Biodegradability: Not applicable. May cause long-term adverse effects in the environment.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
<b>arsenic acid (7778-39-4)</b>	
Persistence and degradability	Biodegradability: Not applicable.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
<b>barium nitrate (10022-31-8)</b>	
Persistence and degradability	Biodegradability: Not applicable.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable

**Environmental Calibration Standard 25 components; Ca 1000ug/ml ; Fe 1000ug/ml ; K 1000ug/ml ; Mg 1000ug/ml ; Na 1000ug/ml ; Ag 10ug/ml ; Al 10ug/ml ; As 10ug/ml ; Ba 10ug/ml ; Be 10ug/ml ; Cd 10ug/ml ; Co 10ug/ml ; Cr 10ug/ml ; Cu 10ug/ml ; Mn 10ug/ml ; Mo 10ug/ml ; Ni 10ug/ml ; Pb 10ug/ml ; Sb 10ug/ml ; Se 10ug/ml ; Ti 10ug/ml ; V 10ug/ml ; Zn 10ug/ml ; Th 10ug/ml ; U 10ug/ml in HNO<sub>3</sub> 10% /tr.HF Equivalent to Agilent Ref: 5183-4688**

**Safety Data Sheet**

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

<b>barium nitrate (10022-31-8)</b>	
ThOD	Not applicable
<b>beryllium nitrate (13597-99-4)</b>	
Persistence and degradability	Biodegradability: Not applicable.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
<b>cadmium nitrate (10325-94-7)</b>	
Persistence and degradability	Biodegradability: Not applicable.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
<b>cobalt dinitrate (10141-05-6)</b>	
Persistence and degradability	Biodegradability: Not applicable.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
<b>chromium(III) nitrate (13548-38-4)</b>	
Persistence and degradability	Biodegradability: Not applicable. Adsorbs into the soil.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
<b>manganese(II)nitrate (10377-66-9)</b>	
Persistence and degradability	Biodegradability: Not applicable.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
<b>nickel nitrate (13138-45-9)</b>	
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
<b>lead nitrate (10099-74-8)</b>	
Persistence and degradability	Biodegradability: Not applicable. Adsorbs into the soil.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable

**Environmental Calibration Standard 25 components; Ca 1000ug/ml ; Fe 1000ug/ml ; K 1000ug/ml ; Mg 1000ug/ml ; Na 1000ug/ml ; Ag 10ug/ml ; Al 10ug/ml ; As 10ug/ml ; Ba 10ug/ml ; Be 10ug/ml ; Cd 10ug/ml ; Co 10ug/ml ; Cr 10ug/ml ; Cu 10ug/ml ; Mn 10ug/ml ; Mo 10ug/ml ; Ni 10ug/ml ; Pb 10ug/ml ; Sb 10ug/ml ; Se 10ug/ml ; Ti 10ug/ml ; V 10ug/ml ; Zn 10ug/ml ; Th 10ug/ml ; U 10ug/ml in HNO<sub>3</sub> 10% /tr.HF Equivalent to Agilent Ref: 5183-4688**

**Safety Data Sheet**

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

<b>lead nitrate (10099-74-8)</b>	
ThOD	Not applicable
<b>hexafluoroantimonic acid (16950-06-4)</b>	
Persistence and degradability	Biodegradability: Not applicable.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
<b>selenious acid (7783-00-8)</b>	
Persistence and degradability	Biodegradability: Not applicable.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
<b>thallium(I)nitrate (10102-45-1)</b>	
Persistence and degradability	Biodegradability: Not applicable. Adsorbs into the soil.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable

**12.3. Bioaccumulative potential**

<b>nitric acid (7697-37-2)</b>	
BCF fish 1	<= 1 (BCF)
Log Pow	-2.3 (OECD 107: Partition Coefficient (n-octanol/water): Shake Flask Method)
Bioaccumulative potential	Bioaccumulation: Not applicable.
<b>hydrofluoric acid (7664-39-3)</b>	
Log Pow	-1.4 (Experimental value)
Bioaccumulative potential	Bioaccumulation: Not applicable.
<b>iron(III) nitrate (10421-48-4)</b>	
Bioaccumulative potential	Not bioaccumulative.
<b>silver nitrate (7761-88-8)</b>	
BCF fish 1	11 - 19 (BCF)
BCF fish 2	15 - 150 (BCF)
Log Pow	0.19 (Estimated value)
Bioaccumulative potential	Low bioaccumulation potential (BCF < 500). Not established.
<b>arsenic acid (7778-39-4)</b>	
Bioaccumulative potential	bioaccumulative.
<b>barium nitrate (10022-31-8)</b>	
Bioaccumulative potential	Not bioaccumulative.
<b>beryllium nitrate (13597-99-4)</b>	
Bioaccumulative potential	Not bioaccumulative.

**Environmental Calibration Standard 25 components; Ca 1000ug/ml ; Fe 1000ug/ml ; K 1000ug/ml ; Mg 1000ug/ml ; Na 1000ug/ml ; Ag 10ug/ml ; Al 10ug/ml ; As 10ug/ml ; Ba 10ug/ml ; Be 10ug/ml ; Cd 10ug/ml ; Co 10ug/ml ; Cr 10ug/ml ; Cu 10ug/ml ; Mn 10ug/ml ; Mo 10ug/ml ; Ni 10ug/ml ; Pb 10ug/ml ; Sb 10ug/ml ; Se 10ug/ml ; Ti 10ug/ml ; V 10ug/ml ; Zn 10ug/ml ; Th 10ug/ml ; U 10ug/ml in HNO3 10% /tr.HF Equivalent to Agilent Ref: 5183-4688**

**Safety Data Sheet**

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

<b>cadmium nitrate (10325-94-7)</b>	
BCF other aquatic organisms 1	1220 (BCF)
BCF other aquatic organisms 2	603 (BCF; 504 h)
Bioaccumulative potential	bioaccumulative.
<b>cobalt dinitrate (10141-05-6)</b>	
Bioaccumulative potential	Bioaccumulation: No data available.
<b>chromium(III) nitrate (13548-38-4)</b>	
BCF other aquatic organisms 1	17000 (BCF)
BCF other aquatic organisms 2	6500 (BCF)
Bioaccumulative potential	Bioaccumulation: No data available.
<b>manganese(II)nitrate (10377-66-9)</b>	
Bioaccumulative potential	Bioaccumulation: No data available.
<b>lead nitrate (10099-74-8)</b>	
Bioaccumulative potential	bioaccumulative.
<b>hexafluoroantimonic acid (16950-06-4)</b>	
Bioaccumulative potential	Bioaccumulation: No data available.
<b>selenious acid (7783-00-8)</b>	
BCF fish 1	20 (BCF)
Bioaccumulative potential	bioaccumulative.

**12.4. Mobility in soil**

No additional information available

**12.5. Other adverse effects**

Effect on the global warming : No known effects from this product.  
GWPmix comment : No known effects from this product.

**SECTION 13: Disposal considerations**

**13.1. Waste treatment methods**

Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.  
Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations.

**SECTION 14: Transport information**

**Department of Transportation (DOT)**

In accordance with DOT

Transport document description : UN2031 Nitric acid other than (red fuming, with not more than 20 percent nitric acid), 8, II

UN-No.(DOT) : UN2031

Proper Shipping Name (DOT) : Nitric acid other than  
red fuming, with not more than 20 percent nitric acid

Class (DOT) : 8 - Class 8 - Corrosive material 49 CFR 173.136

**Environmental Calibration Standard 25 components; Ca 1000ug/ml ; Fe 1000ug/ml ; K 1000ug/ml ; Mg 1000ug/ml ; Na 1000ug/ml ; Ag 10ug/ml ; Al 10ug/ml ; As 10ug/ml ; Ba 10ug/ml ; Be 10ug/ml ; Cd 10ug/ml ; Co 10ug/ml ; Cr 10ug/ml ; Cu 10ug/ml ; Mn 10ug/ml ; Mo 10ug/ml ; Ni 10ug/ml ; Pb 10ug/ml ; Sb 10ug/ml ; Se 10ug/ml ; Ti 10ug/ml ; V 10ug/ml ; Zn 10ug/ml ; Th 10ug/ml ; U 10ug/ml in HNO3 10% /tr.HF Equivalent to Agilent Ref: 5183-4688**

**Safety Data Sheet**

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Packing group (DOT) : II - Medium Danger  
Hazard labels (DOT) : 8 - Corrosive



DOT Packaging Non Bulk (49 CFR 173.xxx) : 158  
DOT Packaging Bulk (49 CFR 173.xxx) : 242  
DOT Special Provisions (49 CFR 172.102) : A6 - For combination packaging, if plastic inner packaging are used, they must be packed in tightly closed metal receptacles before packing in outer packaging  
B2 - MC 300, MC 301, MC 302, MC 303, MC 305, and MC 306 and DOT 406 cargo tanks are not authorized  
B47 - Each tank may have a reclosing pressure relief device having a start-to-discharge pressure setting of 310 kPa (45 psig)  
B53 - Packaging must be made of either aluminum or steel  
IB2 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized  
T8 - 4 178.274(d)(2) Normal..... Prohibited  
TP2 - a. The maximum degree of filling must not exceed the degree of filling determined by the following: (image) Where:  $t_r$  is the maximum mean bulk temperature during transport,  $t_f$  is the temperature in degrees celsius of the liquid during filling, and  $a$  is the mean coefficient of cubical expansion of the liquid between the mean temperature of the liquid during filling ( $t_f$ ) and the maximum mean bulk temperature during transportation ( $t_r$ ) both in degrees celsius. b. For liquids transported under ambient conditions may be calculated using the formula: (image) Where:  $d_{15}$  and  $d_{50}$  are the densities (in units of mass per unit volume) of the liquid at 15 C (59 F) and 50 C (122 F), respectively  
TP12 - This material is considered highly corrosive to steel  
DOT Packaging Exceptions (49 CFR 173.xxx) : None  
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : 1 L  
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 30 L  
DOT Vessel Stowage Location : D - The material must be stowed "on deck only" on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers or one passenger per each 3 m of overall vessel length, but the material is prohibited on passenger vessels in which the limiting number of passengers is exceeded  
Emergency Response Guide (ERG) Number : 157  
Other information : No supplementary information available.

**TDG**

Transport document description : UN2031 NITRIC ACID (other than red fuming, with less than 65% nitric acid), 8, II  
UN-No. (TDG) : UN2031  
Proper Shipping Name (TDG) : NITRIC ACID  
TDG Primary Hazard Classes : 8 - Class 8 - Corrosives  
Packing group : II - Medium Danger  
Explosive Limit and Limited Quantity Index : 1 L  
Passenger Carrying Road Vehicle or Passenger Carrying Railway Vehicle Index : Forbidden  
Passenger Carrying Ship Index : Forbidden

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**Safety Data Sheet**

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

**Transport by sea**

UN-No. (IMDG)	:	2031
Proper Shipping Name (IMDG)	:	NITRIC ACID
Class (IMDG)	:	8 - Corrosive substances
Packing group (IMDG)	:	II - substances presenting medium danger
Limited quantities (IMDG)	:	1 L

**Air transport**

UN-No. (IATA)	:	2031
Proper Shipping Name (IATA)	:	Nitric acid
Class (IATA)	:	8 - Corrosives
Packing group (IATA)	:	II - Medium Danger

**SECTION 15: Regulatory information**

**15.1. US Federal regulations**

<b>nitric acid (7697-37-2)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Subject to reporting requirements of United States SARA Section 313	
CERCLA RQ	1000 lb
SARA Section 302 Threshold Planning Quantity (TPQ)	1000 lb
<b>hydrofluoric acid (7664-39-3)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Subject to reporting requirements of United States SARA Section 313	
EPA TSCA Regulatory Flag	T - T - indicates a substance that is the subject of a Section 4 test rule under TSCA
CERCLA RQ	100 lb
SARA Section 302 Threshold Planning Quantity (TPQ)	100 lb
<b>iron(III) nitrate (10421-48-4)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Not subject to reporting requirements of the United States SARA Section 313	
CERCLA RQ	1000 lb
<b>silver nitrate (7761-88-8)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Subject to reporting requirements of United States SARA Section 313	
CERCLA RQ	1 lb
<b>arsenic acid (7778-39-4)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Subject to reporting requirements of United States SARA Section 313	
CERCLA RQ	1 lb
<b>barium nitrate (10022-31-8)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	

**Environmental Calibration Standard 25 components; Ca 1000ug/ml ; Fe 1000ug/ml ; K 1000ug/ml ; Mg 1000ug/ml ; Na 1000ug/ml ; Ag 10ug/ml ; Al 10ug/ml ; As 10ug/ml ; Ba 10ug/ml ; Be 10ug/ml ; Cd 10ug/ml ; Co 10ug/ml ; Cr 10ug/ml ; Cu 10ug/ml ; Mn 10ug/ml ; Mo 10ug/ml ; Ni 10ug/ml ; Pb 10ug/ml ; Sb 10ug/ml ; Se 10ug/ml ; Ti 10ug/ml ; V 10ug/ml ; Zn 10ug/ml ; Th 10ug/ml ; U 10ug/ml in HNO3 10% /tr.HF Equivalent to Agilent Ref: 5183-4688**

**Safety Data Sheet**

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

**beryllium nitrate (13597-99-4)**

Listed on the United States TSCA (Toxic Substances Control Act) inventory  
Subject to reporting requirements of United States SARA Section 313

CERCLA RQ	1 lb
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**cadmium nitrate (10325-94-7)**

Listed on the United States TSCA (Toxic Substances Control Act) inventory

**cobalt dinitrate (10141-05-6)**

Listed on the United States TSCA (Toxic Substances Control Act) inventory

**chromium(III) nitrate (13548-38-4)**

Listed on the United States TSCA (Toxic Substances Control Act) inventory

**manganese(II)nitrate (10377-66-9)**

Listed on the United States TSCA (Toxic Substances Control Act) inventory

**nickel nitrate (13138-45-9)**

Listed on the United States TSCA (Toxic Substances Control Act) inventory  
Subject to reporting requirements of United States SARA Section 313

CERCLA RQ	100 lb
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**lead nitrate (10099-74-8)**

Listed on the United States TSCA (Toxic Substances Control Act) inventory  
Subject to reporting requirements of United States SARA Section 313

CERCLA RQ	10 lb
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**hexafluoroantimonic acid (16950-06-4)**

Listed on the United States TSCA (Toxic Substances Control Act) inventory

**selenious acid (7783-00-8)**

Listed on the United States TSCA (Toxic Substances Control Act) inventory  
Subject to reporting requirements of United States SARA Section 313

CERCLA RQ	10 lb
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SARA Section 302 Threshold Planning Quantity (TPQ)	10000 lb 1,000lb if the substance is solid in powder form with particle size less than 100 microns, or is in solution or molten form
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**thallium(I)nitrate (10102-45-1)**

Listed on the United States TSCA (Toxic Substances Control Act) inventory  
Subject to reporting requirements of United States SARA Section 313

CERCLA RQ	100 lb
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**15.2. International regulations**

**CANADA**

No additional information available

**EU-Regulations**

No additional information available

**Environmental Calibration Standard 25 components; Ca 1000ug/ml ; Fe 1000ug/ml ; K 1000ug/ml ; Mg 1000ug/ml ; Na 1000ug/ml ; Ag 10ug/ml ; Al 10ug/ml ; As 10ug/ml ; Ba 10ug/ml ; Be 10ug/ml ; Cd 10ug/ml ; Co 10ug/ml ; Cr 10ug/ml ; Cu 10ug/ml ; Mn 10ug/ml ; Mo 10ug/ml ; Ni 10ug/ml ; Pb 10ug/ml ; Sb 10ug/ml ; Se 10ug/ml ; Ti 10ug/ml ; V 10ug/ml ; Zn 10ug/ml ; Th 10ug/ml ; U 10ug/ml in HNO3 10% /tr.HF Equivalent to Agilent Ref: 5183-4688**

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

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### National regulations

No additional information available

### 15.3. US State regulations

No additional information available

## SECTION 16: Other information

Revision date : 09/10/2016

**Environmental Calibration Standard 25 components; Ca 1000ug/ml ; Fe 1000ug/ml ; K 1000ug/ml ; Mg 1000ug/ml ; Na 1000ug/ml ; Ag 10ug/ml ; Al 10ug/ml ; As 10ug/ml ; Ba 10ug/ml ; Be 10ug/ml ; Cd 10ug/ml ; Co 10ug/ml ; Cr 10ug/ml ; Cu 10ug/ml ; Mn 10ug/ml ; Mo 10ug/ml ; Ni 10ug/ml ; Pb 10ug/ml ; Sb 10ug/ml ; Se 10ug/ml ; Ti 10ug/ml ; V 10ug/ml ; Zn 10ug/ml ; Th 10ug/ml ; U 10ug/ml in HNO3 10% /tr.HF Equivalent to Agilent Ref: 5183-4688**

**Safety Data Sheet**

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Full text of H-phrases:

H272	May intensify fire; oxidizer
H290	May be corrosive to metals
H300	Fatal if swallowed
H301	Toxic if swallowed
H302	Harmful if swallowed
H310	Fatal in contact with skin
H312	Harmful in contact with skin
H314	Causes severe skin burns and eye damage
H315	Causes skin irritation
H317	May cause an allergic skin reaction
H318	Causes serious eye damage
H319	Causes serious eye irritation
H330	Fatal if inhaled
H331	Toxic if inhaled
H332	Harmful if inhaled
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled
H335	May cause respiratory irritation
H341	Suspected of causing genetic defects
H350	May cause cancer
H351	Suspected of causing cancer
H360	May damage fertility or the unborn child
H372	Causes damage to organs through prolonged or repeated exposure
H373	May cause damage to organs through prolonged or repeated exposure
H400	Very toxic to aquatic life
H401	Toxic to aquatic life
H402	Harmful to aquatic life
H410	Very toxic to aquatic life with long lasting effects
H411	Toxic to aquatic life with long lasting effects
H412	Harmful to aquatic life with long lasting effects

NFPA health hazard

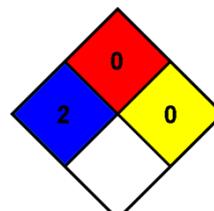
: 2 - Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical attention is given.

NFPA fire hazard

: 0 - Materials that will not burn.

NFPA reactivity

: 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



HMIS III Rating

Health : 2 Moderate Hazard - Temporary or minor injury may occur

Flammability : 0 Minimal Hazard - Materials that will not burn

Physical : 0 Minimal Hazard - Materials that are normally stable, even under fire conditions, and will NOT react with water, polymerize, decompose, condense, or self-react. Non-Explosives.

Personal protection : C

C - Safety glasses, Gloves, Synthetic apron

SDS US (GHS HazCom 2012)

*This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.*