



ICP-MS Calibration Standard (XXI) - 29 components; 10mg/l each of Ag ; Al ; As ; Ba ; Be ; Bi ; Ca ; Cd ; Co ; Cr ; Cs ; Cu ; Fe ; Ga ; In ; K ; Li ; Mg ; Mn ; Na ; Ni ; Pb ; Rb ; Se ; Sr ; Tl ; U ; V ; Zn in HNO3 5% Equivalent to Merck Ref: 109498

Safety Data Sheet

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

Date of issue: 09/10/2016

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Version: 1.1

SECTION 1: Identification

1.1. Identification

Product form : Mixture
Name : ICP-MS Calibration Standard (XXI) - 29 components; 10mg/l each of Ag ; Al ; As ; Ba ; Be ; Bi ; Ca ; Cd ; Co ; Cr ; Cs ; Cu ; Fe ; Ga ; In ; K ; Li ; Mg ; Mn ; Na ; Ni ; Pb ; Rb ; Se ; Sr ; Tl ; U ; V ; Zn in HNO3 5% Equivalent to Merck Ref: 109498
Product code : EQ0081

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

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

Web: 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

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 H402
aquatic environment -
Acute Hazard Category
3

Full text of H statements : see section 16

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

ICP-MS Calibration Standard (XXI) - 29 components; 10mg/l each of Ag ; Al ; As ; Ba ; Be ; Bi ; Ca ; Cd ; Co ; Cr ; Cs ; Cu ; Fe ; Ga ; In ; K ; Li ; Mg ; Mn ; Na ; Ni ; Pb ; Rb ; Se ; Sr ; Tl ; U ; V ; Zn in HNO3 5% Equivalent to Merck Ref: 109498

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| | |
|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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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| 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 |
| 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 |
| iron(III) nitrate | (CAS No) 10421-48-4 | < 0.1 | Skin Irrit. 2, H315 Eye Irrit. 2A, H319 STOT SE 3, H335 |
| 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 |
| Indium(III) nitrate, pentahydrate | (CAS No) 13465-14-0 | < 0.1 | Skin Irrit. 2, H315 Eye Irrit. 2A, H319 |
| 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 |
| 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 |
| 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 |

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| Name | Product identifier | % | GHS-US classification |
|--------------------|---------------------|-------|--------------------------------------------------------------------------------------------------|
| 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.

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.

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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

| nitric acid (7697-37-2) | | |
|--------------------------------|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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 ³) | 5 mg/m ³ |
| OSHA | OSHA PEL (TWA) (ppm) | 2 ppm |
| silver nitrate (7761-88-8) | | |
| ACGIH | ACGIH TWA (mg/m ³) | 0.01 mg/m ³ (Silver Soluble compounds, as Ag; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value) |
| Not applicable | | |
| arsenic acid (7778-39-4) | | |
| ACGIH | ACGIH TWA (mg/m ³) | 0.01 mg/m ³ (Arsenic, inorganic compounds (except Arsine), as As; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value) |
| Not applicable | | |
| barium nitrate (10022-31-8) | | |
| ACGIH | ACGIH TWA (mg/m ³) | 0.5 mg/m ³ (Barium, soluble compounds, as Ba; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value) |
| OSHA | OSHA PEL (TWA) (mg/m ³) | 0.5 mg/m ³ |
| beryllium nitrate (13597-99-4) | | |
| ACGIH | ACGIH TWA (mg/m ³) | 0.00005 mg/m ³ |
| ACGIH | Remark (ACGIH) | Beryllium sens; chronic beryllium; Skin; DSEN; RSEN; A1 |
| OSHA | Remark (OSHA) | (2) See Table Z-2. |
| cadmium nitrate (10325-94-7) | | |
| ACGIH | ACGIH TWA (mg/m ³) | 0.01 mg/m ³ (Cadmium, compounds, as Cd; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value; Cadmium, compounds, as Cd; 0.002 mg/m ³ ; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value; Respirable fraction) |
| Not applicable | | |

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| cobalt dinitrate (10141-05-6) | | |
|-------------------------------------------------------|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ACGIH | ACGIH TWA (mg/m ³) | 0.02 mg/m ³ (Cobalt, inorganic compounds, as Co; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value) |
| Not applicable | | |
| chromium(III) nitrate (13548-38-4) | | |
| ACGIH | ACGIH TWA (mg/m ³) | 0.5 mg/m ³ (Chromium, inorganic Cr III compounds; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value) |
| Not applicable | | |
| iron(III) nitrate (10421-48-4) | | |
| ACGIH | ACGIH TWA (mg/m ³) | 1 mg/m ³ (Iron salts, soluble, as Fe; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value) |
| Not applicable | | |
| Indium(III) nitrate, pentahydrate (13465-14-0) | | |
| ACGIH | ACGIH TWA (mg/m ³) | 0.1 mg/m ³ |
| ACGIH | Remark (ACGIH) | Pulm edema; pneumonitis |
| manganese(II)nitrate (10377-66-9) | | |
| ACGIH | ACGIH TWA (mg/m ³) | 0.02 mg/m ³ |
| ACGIH | Remark (ACGIH) | CNS impair; A4 |
| nickel nitrate (13138-45-9) | | |
| ACGIH | ACGIH TWA (mg/m ³) | 0.1 mg/m ³ (Nickel, Soluble inorganic compounds (NOS), as Ni; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value; Inhalable fraction) |
| Not applicable | | |
| lead nitrate (10099-74-8) | | |
| ACGIH | ACGIH TWA (mg/m ³) | 0.05 mg/m ³ (Lead, inorganic compounds, as Pb; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value) |
| ACGIH | Remark (ACGIH) | CNS & PNS impair |
| selenious acid (7783-00-8) | | |
| ACGIH | ACGIH TWA (mg/m ³) | 0.2 mg/m ³ (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 ³) | 0.2 mg/m ³ |
| thallium(I)nitrate (10102-45-1) | | |
| ACGIH | ACGIH TWA (mg/m ³) | 0.02 mg/m ³ |
| ACGIH | Remark (ACGIH) | dam; peripheral neuropathy |
| OSHA | OSHA PEL (TWA) (mg/m ³) | 0.1 mg/m ³ |

8.2. Exposure controls

Appropriate engineering controls : Ensure good ventilation of the work station.

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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
Color : Mixture contains one or more component(s) which have the following colour(s): colorless to yellow On exposure to light: red-brown Colourless to grey On exposure to light: dark grey to black White Colourless to white White to light yellow Colorless Light red Light green Blue-green Light violet Colourless-white Colourless to light rose Green 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 No data available on odour Mild 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.

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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.

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

| | |
|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| silver nitrate (7761-88-8) | |
| LD50 oral rat | 1173 mg/kg (Rat) |
| ATE US (oral) | 1173.000 mg/kg body weight |
| arsenic acid (7778-39-4) | |
| LD50 oral rat | 48 mg/kg (Rat) |
| ATE US (oral) | 48.000 mg/kg body weight |
| barium nitrate (10022-31-8) | |
| LD50 oral rat | 355 mg/kg (Rat) |
| ATE US (oral) | 355.000 mg/kg body weight |
| beryllium nitrate (13597-99-4) | |
| ATE US (oral) | 100.000 mg/kg body weight |
| cadmium nitrate (10325-94-7) | |
| 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 |
| chromium(III) nitrate (13548-38-4) | |
| LD50 oral rat | 3250 mg/kg (Rat) |
| ATE US (oral) | 3250.000 mg/kg body weight |
| nickel nitrate (13138-45-9) | |
| 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 |
| lead nitrate (10099-74-8) | |
| 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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| selenious acid (7783-00-8) | |
|-----------------------------------|---------------------------|
| 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 |

| thallium(I)nitrate (10102-45-1) | |
|----------------------------------------|-------------------------|
| 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 |

| arsenic acid (7778-39-4) | |
|---------------------------------|--------------------------------------|
| IARC group | 2B - Possibly carcinogenic to humans |

| beryllium nitrate (13597-99-4) | |
|---------------------------------------|----------------------------|
| IARC group | 1 - Carcinogenic to humans |

| cadmium nitrate (10325-94-7) | |
|-------------------------------------|----------------------------|
| IARC group | 1 - Carcinogenic to humans |

| cobalt dinitrate (10141-05-6) | |
|--------------------------------------|--------------------------------------|
| IARC group | 2B - Possibly carcinogenic to humans |

| chromium(III) nitrate (13548-38-4) | |
|-------------------------------------------|----------------------|
| IARC group | 3 - Not classifiable |

| lead nitrate (10099-74-8) | |
|----------------------------------|--------------------------------------|
| IARC group | 2A - Probably carcinogenic to humans |

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

| | |
|--------------------------------------|---------------------------|
| 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. |
|-------------------|----------------------------|

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| | |
|----------------------------------------|----------------------------------------------------|
| 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) |
| 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; Salmo gairdneri) |
| 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) |
| 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) |
| selenious acid (7783-00-8) | |
| LC50 fish 1 | 0.62 - 0.97 mg/l (LC50; 96 h; Pimephales promelas) |
| EC50 Daphnia 2 | 0.430 mg/l (EC50; 48 h) |
| thallium(I)nitrate (10102-45-1) | |
| LC50 fish 1 | 180 mg/l (LC50) |
| EC50 Daphnia 1 | 1.6 mg/l (EC50; 24 h) |

12.2. Persistence and degradability

| | |
|-----------------------------------|-------------------------------------------------------------------------------------------|
| nitric acid (7697-37-2) | |
| Persistence and degradability | Biodegradability: Not applicable. |
| Biochemical oxygen demand (BOD) | Not applicable |
| Chemical oxygen demand (COD) | Not applicable |
| ThOD | Not applicable |
| silver nitrate (7761-88-8) | |
| Persistence and degradability | Biodegradability: Not applicable. May cause long-term adverse effects in the environment. |

ICP-MS Calibration Standard (XXI) - 29 components; 10mg/l each of Ag ; Al ; As ; Ba ; Be ; Bi ; Ca ; Cd ; Co ; Cr ; Cs ; Cu ; Fe ; Ga ; In ; K ; Li ; Mg ; Mn ; Na ; Ni ; Pb ; Rb ; Se ; Sr ; Tl ; U ; V ; Zn in HNO3 5% Equivalent to Merck Ref: 109498

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| | |
|-------------------------------------------|----------------------------------------------------------|
| silver nitrate (7761-88-8) | |
| Biochemical oxygen demand (BOD) | Not applicable |
| Chemical oxygen demand (COD) | Not applicable |
| ThOD | Not applicable |
| arsenic acid (7778-39-4) | |
| Persistence and degradability | Biodegradability: Not applicable. |
| Biochemical oxygen demand (BOD) | Not applicable |
| Chemical oxygen demand (COD) | Not applicable |
| ThOD | Not applicable |
| barium nitrate (10022-31-8) | |
| Persistence and degradability | Biodegradability: Not applicable. |
| Biochemical oxygen demand (BOD) | Not applicable |
| Chemical oxygen demand (COD) | Not applicable |
| ThOD | Not applicable |
| beryllium nitrate (13597-99-4) | |
| Persistence and degradability | Biodegradability: Not applicable. |
| Biochemical oxygen demand (BOD) | Not applicable |
| Chemical oxygen demand (COD) | Not applicable |
| ThOD | Not applicable |
| cadmium nitrate (10325-94-7) | |
| Persistence and degradability | Biodegradability: Not applicable. |
| Biochemical oxygen demand (BOD) | Not applicable |
| Chemical oxygen demand (COD) | Not applicable |
| ThOD | Not applicable |
| cobalt dinitrate (10141-05-6) | |
| Persistence and degradability | Biodegradability: Not applicable. |
| Biochemical oxygen demand (BOD) | Not applicable |
| Chemical oxygen demand (COD) | Not applicable |
| ThOD | Not applicable |
| chromium(III) nitrate (13548-38-4) | |
| 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 |
| iron(III) nitrate (10421-48-4) | |
| Persistence and degradability | Biodegradability: Not applicable. |
| Biochemical oxygen demand (BOD) | Not applicable |
| Chemical oxygen demand (COD) | Not applicable |
| ThOD | Not applicable |

ICP-MS Calibration Standard (XXI) - 29 components; 10mg/l each of Ag ; Al ; As ; Ba ; Be ; Bi ; Ca ; Cd ; Co ; Cr ; Cs ; Cu ; Fe ; Ga ; In ; K ; Li ; Mg ; Mn ; Na ; Ni ; Pb ; Rb ; Se ; Sr ; Tl ; U ; V ; Zn in HNO3 5% Equivalent to Merck Ref: 109498

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| manganese(II)nitrate (10377-66-9) | |
|------------------------------------------|-----------------------------------|
| Persistence and degradability | Biodegradability: Not applicable. |
| Biochemical oxygen demand (BOD) | Not applicable |
| Chemical oxygen demand (COD) | Not applicable |
| ThOD | Not applicable |

| nickel nitrate (13138-45-9) | |
|------------------------------------|----------------|
| Biochemical oxygen demand (BOD) | Not applicable |
| Chemical oxygen demand (COD) | Not applicable |
| ThOD | Not applicable |

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

| selenious acid (7783-00-8) | |
|-----------------------------------|-----------------------------------|
| Persistence and degradability | Biodegradability: Not applicable. |
| Biochemical oxygen demand (BOD) | Not applicable |
| Chemical oxygen demand (COD) | Not applicable |
| ThOD | Not applicable |

| thallium(I)nitrate (10102-45-1) | |
|----------------------------------------|----------------------------------------------------------|
| 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

| nitric acid (7697-37-2) | |
|--------------------------------|------------------------------------------------------------------------------|
| BCF fish 1 | <= 1 (BCF) |
| Log Pow | -2.3 (OECD 107: Partition Coefficient (n-octanol/water): Shake Flask Method) |
| Bioaccumulative potential | Bioaccumulation: Not applicable. |

| silver nitrate (7761-88-8) | |
|-----------------------------------|-------------------------------------------------------------|
| 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. |

| arsenic acid (7778-39-4) | |
|---------------------------------|------------------|
| Bioaccumulative potential | bioaccumulative. |

| barium nitrate (10022-31-8) | |
|------------------------------------|----------------------|
| Bioaccumulative potential | Not bioaccumulative. |

| beryllium nitrate (13597-99-4) | |
|---------------------------------------|----------------------|
| Bioaccumulative potential | Not bioaccumulative. |

| cadmium nitrate (10325-94-7) | |
|-------------------------------------|------------|
| BCF other aquatic organisms 1 | 1220 (BCF) |

ICP-MS Calibration Standard (XXI) - 29 components; 10mg/l each of Ag ; Al ; As ; Ba ; Be ; Bi ; Ca ; Cd ; Co ; Cr ; Cs ; Cu ; Fe ; Ga ; In ; K ; Li ; Mg ; Mn ; Na ; Ni ; Pb ; Rb ; Se ; Sr ; Tl ; U ; V ; Zn in HNO3 5% Equivalent to Merck Ref: 109498

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| | |
|-------------------------------------------|-------------------------------------|
| cadmium nitrate (10325-94-7) | |
| BCF other aquatic organisms 2 | 603 (BCF; 504 h) |
| Bioaccumulative potential | bioaccumulative. |
| cobalt dinitrate (10141-05-6) | |
| Bioaccumulative potential | Bioaccumulation: No data available. |
| chromium(III) nitrate (13548-38-4) | |
| BCF other aquatic organisms 1 | 17000 (BCF) |
| BCF other aquatic organisms 2 | 6500 (BCF) |
| Bioaccumulative potential | Bioaccumulation: No data available. |
| iron(III) nitrate (10421-48-4) | |
| Bioaccumulative potential | Not bioaccumulative. |
| manganese(II)nitrate (10377-66-9) | |
| Bioaccumulative potential | Bioaccumulation: No data available. |
| lead nitrate (10099-74-8) | |
| Bioaccumulative potential | bioaccumulative. |
| selenious acid (7783-00-8) | |
| 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 : UN3264 Corrosive liquid, acidic, inorganic, n.o.s. (CONTAINS ; nitric acid), 8, II

UN-No.(DOT) : UN3264
Proper Shipping Name (DOT) : Corrosive liquid, acidic, inorganic, n.o.s.
CONTAINS ; nitric acid

Class (DOT) : 8 - Class 8 - Corrosive material 49 CFR 173.136
Packing group (DOT) : II - Medium Danger

ICP-MS Calibration Standard (XXI) - 29 components; 10mg/l each of Ag ; Al ; As ; Ba ; Be ; Bi ; Ca ; Cd ; Co ; Cr ; Cs ; Cu ; Fe ; Ga ; In ; K ; Li ; Mg ; Mn ; Na ; Ni ; Pb ; Rb ; Se ; Sr ; Tl ; U ; V ; Zn in HNO3 5% Equivalent to Merck Ref: 109498

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Hazard labels (DOT) : 8 - Corrosive



DOT Packaging Non Bulk (49 CFR 173.xxx) : 202

DOT Packaging Bulk (49 CFR 173.xxx) : 242

DOT Symbols : G - Identifies PSN requiring a technical name

DOT Special Provisions (49 CFR 172.102) : B2 - MC 300, MC 301, MC 302, MC 303, MC 305, and MC 306 and DOT 406 cargo tanks are not authorized
 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
 T11 - 6 178.274(d)(2) Normal..... 178.275(d)(3)
 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
 TP27 - A portable tank having a minimum test pressure of 4 bar (400 kPa) may be used provided the calculated test pressure is 4 bar or less based on the MAWP of the hazardous material, as defined in 178.275 of this subchapter, where the test pressure is 1.5 times the MAWP

DOT Packaging Exceptions (49 CFR 173.xxx) : 154

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 : B - (i) The material may be stowed "on deck" or "under deck" 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; and (ii) "On deck only" on passenger vessels in which the number of passengers specified in paragraph (k)(2)(i) of this section is exceeded

DOT Vessel Stowage Other : 40 - Stow "clear of living quarters"

Emergency Response Guide (ERG) Number : 154

Other information : No supplementary information available.

TDG

Transport document description : UN3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (CONTAINS ; nitric acid), 8, II

UN-No. (TDG) : UN3264

Proper Shipping Name (TDG) : CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.

TDG Primary Hazard Classes : 8 - Class 8 - Corrosives

Packing group : II - Medium Danger

ICP-MS Calibration Standard (XXI) - 29 components; 10mg/l each of Ag ; Al ; As ; Ba ; Be ; Bi ; Ca ; Cd ; Co ; Cr ; Cs ; Cu ; Fe ; Ga ; In ; K ; Li ; Mg ; Mn ; Na ; Ni ; Pb ; Rb ; Se ; Sr ; Tl ; U ; V ; Zn in HNO3 5% Equivalent to Merck Ref: 109498

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| | |
|-----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TDG Special Provisions | : 16 - (1) The technical name of at least one of the most dangerous substances that predominantly contributes to the hazard or hazards posed by the dangerous goods must be shown, in parentheses, on the shipping document following the shipping name in accordance with clause 3.5(1)(c)(ii)(A) of Part 3 (Documentation). The technical name must also be shown, in parentheses, on a small means of containment or on a tag following the shipping name in accordance with subsections 4.11(2) and (3) of Part 4 (Dangerous Goods Safety Marks). (2) Despite subsection (1), the technical name for the following dangerous goods is not required to be shown on a shipping document or on a small means of containment when Canadian law for domestic transport or an international convention for international transport prohibits the disclosure of the technical name: (a)UN1544, ALKALOID SALTS, SOLID, N.O.S. or ALKALOIDS, SOLID, N.O.S; (b)UN1851, MEDICINE, LIQUID, TOXIC, N.O.S; (c)UN3140, ALKALOID SALTS, LIQUID, N.O.S. or ALKALOIDS, LIQUID, N.O.S; (d)UN3248, MEDICINE, LIQUID, FLAMMABLE, TOXIC, N.O.S; or (e)UN3249, MEDICINE, SOLID, TOXIC, N.O.S. An example in Canada is the "Food and Drugs Act". (3) Despite subsection (1), the technical name for the following dangerous goods is not required to be shown on a small means of containment: (a)UN2814, INFECTIOUS SUBSTANCE, AFFECTING HUMANS; or (b)UN2900, INFECTIOUS SUBSTANCE, AFFECTING ANIMALS. SOR/2014-306 |
| Explosive Limit and Limited Quantity Index | : 1 L |
| Passenger Carrying Road Vehicle or Passenger Carrying Railway Vehicle Index | : 1 L |

Transport by sea

| | |
|-----------------------------|-----------------------------------------------|
| UN-No. (IMDG) | : 3264 |
| Proper Shipping Name (IMDG) | : CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. |
| Class (IMDG) | : 8 - Corrosive substances |
| Packing group (IMDG) | : II - substances presenting medium danger |
| Limited quantities (IMDG) | : 1 L |

Air transport

| | |
|-----------------------------|-----------------------------------------------|
| UN-No. (IATA) | : 3264 |
| Proper Shipping Name (IATA) | : Corrosive liquid, acidic, inorganic, n.o.s. |
| Class (IATA) | : 8 - Corrosives |
| Packing group (IATA) | : II - Medium Danger |

SECTION 15: Regulatory information

15.1. US Federal regulations

| | |
|--------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| nitric acid (7697-37-2) | |
| 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 |
| silver nitrate (7761-88-8) | |
| 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 |
| arsenic acid (7778-39-4) | |
| 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 |
| barium nitrate (10022-31-8) | |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory | |

ICP-MS Calibration Standard (XXI) - 29 components; 10mg/l each of Ag ; Al ; As ; Ba ; Be ; Bi ; Ca ; Cd ; Co ; Cr ; Cs ; Cu ; Fe ; Ga ; In ; K ; Li ; Mg ; Mn ; Na ; Ni ; Pb ; Rb ; Se ; Sr ; Tl ; U ; V ; Zn in HNO3 5% Equivalent to Merck Ref: 109498

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| | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| 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 |
| 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 | |
| iron(III) nitrate (10421-48-4) | |
| 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 |
| indium(III) nitrate, pentahydrate (13465-14-0) | |
| Not 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 |
| 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 |
| 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 |
| 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 |
| 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 |

15.2. International regulations

CANADA

No additional information available

EU-Regulations

No additional information available

ICP-MS Calibration Standard (XXI) - 29 components; 10mg/l each of Ag ; Al ; As ; Ba ; Be ; Bi ; Ca ; Cd ; Co ; Cr ; Cs ; Cu ; Fe ; Ga ; In ; K ; Li ; Mg ; Mn ; Na ; Ni ; Pb ; Rb ; Se ; Sr ; Tl ; U ; V ; Zn in HNO3 5% Equivalent to Merck Ref: 109498

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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

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 |
| 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 |
| 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

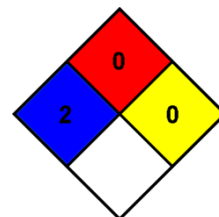
: 2 - Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical attention is given.

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.



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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.