

## 1 Identification

- **Product identifier**
- **Product Name:** Mixed Calibration Standard 1
- **Part Name:**  
MIXSTD1-100  
MIXSTD1-500
- **Application of the substance / the mixture** Certified Reference Material
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**  
Spex CertiPrep, LLC.  
203 Norcross Ave, Metuchen,  
NJ 08840 USA  
732-549-7144  
USMet-CRMSales@antylia.com
- **Information department:** product safety department
- **Emergency telephone number:**  
Emergency Phone Number (24 hours)  
CHEMTREC (800-424-9300)  
Outside US: 703-527-3887

## 2 Hazard(s) identification

- **Classification of the substance or mixture**



GHS07

Skin Irritation 2 H315 Causes skin irritation.

Eye Irritation 2A H319 Causes serious eye irritation.

- **Label elements**
- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms**



GHS07

- **Signal word** Warning
- **Hazard statements**  
H315 Causes skin irritation.  
H319 Causes serious eye irritation.
- **Precautionary statements**  
P264 Wash thoroughly after handling.  
P280 Wear eye protection / face protection.  
P302+P352 If on skin: Wash with plenty of water.  
P321 Specific treatment (see on this label).  
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P332+P313 If skin irritation occurs: Get medical advice/attention.  
P362+P364 Take off contaminated clothing and wash it before reuse.  
P337+P313 If eye irritation persists: Get medical advice/attention.
- **Classification system:**
- **NFPA ratings (scale 0 - 4)**



Health = 2  
Fire = 0  
Reactivity = 0

- **HMIS-ratings (scale 0 - 4)**



Health = 2  
Fire = 0  
Reactivity = 0

- **Other hazards**
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.

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· **vPvB:** Not applicable.

### 3 Composition/information on ingredients

- **Chemical characterization: Mixtures**
- **Description:** Mixture of the substances listed below with nonhazardous additions.

· **Dangerous components:**

|           |             |       |
|-----------|-------------|-------|
| 7697-37-2 | nitric acid | 2.0%  |
| 7439-92-1 | lead        | 0.05% |

· **Chemical identification of the substance/preparation**

|           |   |         |
|-----------|---|---------|
| 7732-18-5 | water, distilled, conductivity or of similar purity | 97.885% |
| 7782-49-2 | selenium  | 0.02%   |
| 7440-43-9 | cadmium   | 0.015%  |
| 7440-66-6 | zinc  | 0.015%  |
| 7439-96-5 | manganese   | 0.01%   |
| 7440-41-7 | beryllium   | 0.005%  |

### 4 First-aid measures

- **Description of first aid measures**
- **General information:** Immediately remove any clothing soiled by the product.
- **After inhalation:** Supply fresh air; consult doctor in case of complaints.
- **After skin contact:** Immediately rinse with water.
- **After eye contact:** Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
- **After swallowing:** Do not give anything to eat or drink - Do not induce vomiting
- **Information for Doctor:**
- **Most important symptoms and effects, both acute and delayed** No further relevant information available.
- **Indication of any immediate medical attention and special treatment needed** No further relevant information available.

### 5 Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:** Use fire fighting measures that suit the environment.
- **Special hazards arising from the substance or mixture** No further relevant information available.
- **Advice for firefighters**
- **Protective equipment:** No special measures required.

### 6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures** Not required.
- **Environmental precautions:**  
Dilute with plenty of water.  
Do not allow to enter sewers/ surface or ground water.
- **Methods and material for containment and cleaning up:** Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
- **Reference to other sections**  
See Section 7 for information on safe handling.  
See Section 8 for information on personal protection equipment.  
See Section 13 for disposal information.
- **Protective Action Criteria for Chemicals**

· **PAC-1:**

|           |           |                          |
|-----------|-----------|--------------------------|
| 7439-92-1 | lead      | 0.15 mg/m <sup>3</sup>   |
| 7782-49-2 | selenium  | 0.6 mg/m <sup>3</sup>    |
| 7440-43-9 | cadmium   | 0.10 mg/m <sup>3</sup>   |
| 7440-66-6 | zinc      | 6 mg/m <sup>3</sup>      |
| 7439-96-5 | manganese | 3 mg/m <sup>3</sup>      |
| 7440-41-7 | beryllium | 0.0023 mg/m <sup>3</sup> |

· **PAC-2:**

|           |           |                        |
|-----------|-----------|------------------------|
| 7439-92-1 | lead      | 120 mg/m <sup>3</sup>  |
| 7782-49-2 | selenium  | 6.6 mg/m <sup>3</sup>  |
| 7440-43-9 | cadmium   | 0.76 mg/m <sup>3</sup> |
| 7440-66-6 | zinc      | 21 mg/m <sup>3</sup>   |
| 7439-96-5 | manganese | 5 mg/m <sup>3</sup>    |

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|               |           |                         |
|---------------|-----------|-------------------------|
| 7440-41-7     | beryllium | 0.025 mg/m <sup>3</sup> |
| <b>PAC-3:</b> |           |                         |
| 7439-92-1     | lead      | 700 mg/m <sup>3</sup>   |
| 7782-49-2     | selenium  | 40 mg/m <sup>3</sup>    |
| 7440-43-9     | cadmium   | 4.7 mg/m <sup>3</sup>   |
| 7440-66-6     | zinc      | 120 mg/m <sup>3</sup>   |
| 7439-96-5     | manganese | 1,800 mg/m <sup>3</sup> |
| 7440-41-7     | beryllium | 0.1 mg/m <sup>3</sup>   |

## 7 Handling and storage

- **Handling:**
- **Precautions for safe handling** No special precautions are necessary if used correctly.
- **Information about protection against explosions and fires:** No special measures required.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** No special requirements.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:** Keep receptacle tightly sealed.
- **Specific end use(s)** No further relevant information available.

## 8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **Control parameters**
- **Components with limit values that require monitoring at the workplace:**  
The following constituent is the only constituent of the product which has a PEL, TLV or other recommended exposure limit.  
At this time, the remaining constituent has no known exposure limits.

|                       |  |
|-----------------------|--|
| <b>7439-92-1 lead</b> |  |
| PEL                   | Long-term value: 0.05* mg/m <sup>3</sup><br>*see 29 CFR 1910.1025                  |
| REL                   | Long-term value: 0.05* mg/m <sup>3</sup><br>*8-hr TWA ;See PocketGuide App.C       |
| TLV                   | Long-term value: 0.05* mg/m <sup>3</sup><br>*and inorganic compds., as Pb; BEI, A3 |

- **Ingredients with biological limit values:**

|                       |  |
|-----------------------|--|
| <b>7439-92-1 lead</b> |  |
| BEI                   | 200 µg/L<br>Medium: blood<br>Time: not critical<br>Parameter: Lead |

- **Additional information:** The lists that were valid during the creation were used as basis.

- **Exposure controls**
- **Personal protective equipment:**
- **General protective and hygienic measures:**  
Keep away from foodstuffs, beverages and feed.  
Immediately remove all soiled and contaminated clothing.  
Wash hands before breaks and at the end of work.  
Avoid contact with the eyes.  
Avoid contact with the eyes and skin.
- **Respiratory protection:** Not required.
- **Protection of hands:**



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.  
Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.  
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

- **Material of gloves**  
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

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- **Penetration time of glove material** The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
- **Eye protection:**



Tightly sealed goggles

## 9 Physical and chemical properties

### · Information on basic physical and chemical properties

#### · General Information

##### · Appearance:

|                  |                                    |
|------------------|------------------------------------|
| Form:            | Liquid                             |
| Color:           | According to product specification |
| Odor:            | Characteristic                     |
| Odour Threshold: | Not applicable.                    |

· pH-value: Not applicable.

#### · Change in condition

|                              |                 |
|------------------------------|-----------------|
| Melting point/Melting range: | Undetermined.   |
| Boiling point/Boiling range: | 100 °C (212 °F) |

· Flash point: Not applicable.

· Flammability (solid, gaseous): Not applicable.

· Decomposition temperature: Not applicable.

· Auto igniting: Product is not selfigniting.

· Danger of explosion: Product does not present an explosion hazard.

#### · Explosion limits:

|        |                 |
|--------|-----------------|
| Lower: | Not applicable. |
| Upper: | Not applicable. |

· Vapor pressure at 20 °C (68 °F): 23 hPa (17.3 mm Hg)

· Density at 20 °C (68 °F) 1.01875 g/cm<sup>3</sup> (8.50147 lbs/gal)

· Relative density Not applicable.

· Vapor density Not applicable.

· Evaporation rate Not applicable.

#### · Solubility in / Miscibility with

|        |                 |
|--------|-----------------|
| Water: | Fully miscible. |
|--------|-----------------|

· Partition coefficient (n-octanol/water): Not applicable.

#### · Viscosity:

|            |                 |
|------------|-----------------|
| Dynamic:   | Not applicable. |
| Kinematic: | Not applicable. |

#### · Solvent content:

|              |        |
|--------------|--------|
| Water:       | 97.9 % |
| VOC content: | 0.00 % |

Solids content: 0.1 %

· Other information No further relevant information available.

## 10 Stability and reactivity

· **Reactivity** No further relevant information available.

#### · Chemical stability

· **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.

· **Possibility of hazardous reactions** No dangerous reactions known.

· **Conditions to avoid** No further relevant information available.

· **Incompatible materials:** No further relevant information available.

· **Hazardous decomposition products:** No dangerous decomposition products known.

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## 11 Toxicological information

### · Information on toxicological effects

#### · Acute toxicity:

#### · LD/LC50 values that are relevant for classification:

##### 7697-37-2 nitric acid

|            |          |                 |
|------------|----------|-----------------|
| Inhalative | LC50/4 h | 2.65 mg/l (ATE) |
|------------|----------|-----------------|

#### · Primary irritant effect:

· on the skin: Irritant to skin and mucous membranes.

· on the eye: Irritating effect.

· Sensitization: No sensitizing effects known.

#### · Additional toxicological information:

The product shows the following dangers according to internally approved calculation methods for preparations:

Irritant

#### · Carcinogenic categories

#### · IARC (International Agency for Research on Cancer)

|           |           |    |
|-----------|-----------|----|
| 7439-92-1 | lead      | 2B |
| 7782-49-2 | selenium  | 3  |
| 7440-43-9 | cadmium   | 1  |
| 7440-41-7 | beryllium | 1  |

#### · NTP (National Toxicology Program)

|           |           |   |
|-----------|-----------|---|
| 7439-92-1 | lead      | R |
| 7440-43-9 | cadmium   | K |
| 7440-41-7 | beryllium | K |

#### · OSHA-Ca (Occupational Safety & Health Administration)

|           |         |
|-----------|---------|
| 7440-43-9 | cadmium |
|-----------|---------|

## 12 Ecological information

### · Toxicity

· Aquatic toxicity: No further relevant information available.

· Persistence and degradability: No further relevant information available.

· Behavior in environmental systems:

· Bioaccumulative potential: No further relevant information available.

· Mobility in soil: No further relevant information available.

#### · Additional ecological information:

#### · General notes:

Water hazard class 1 (Self-assessment): slightly hazardous for water

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

#### · Results of PBT and vPvB assessment

· PBT: Not applicable.

· vPvB: Not applicable.

· Other adverse effects: No further relevant information available.

## 13 Disposal considerations

### · Waste treatment methods

· Recommendation: Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

### · Uncleaned packagings:

· Recommendation: Disposal must be made according to official regulations.

· Recommended cleansing agent: Water, if necessary with cleansing agents.

## 14 Transport information

### · UN-Number

· DOT, ADR, IMDG, IATA

UN3264

### · UN proper shipping name

· DOT

· ADR

· IMDG, IATA

Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid)

3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID)

CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID)

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|   |   |
|---|---|
| · <b>Transport hazard class(es)</b><br>· <b>DOT</b><br>  |   |
| · <b>Class</b><br>· <b>Label</b>  | 8 Corrosive substances<br>8   |
| · <b>ADR, IMDG, IATA</b><br>   |   |
| · <b>Class</b><br>· <b>Label</b>  | 8 Corrosive substances<br>8   |
| · <b>Packing group</b><br>· <b>DOT, ADR, IMDG, IATA</b>   | III   |
| · <b>Environmental hazards:</b>   | Not applicable.   |
| · <b>Special precautions for user</b><br>· <b>Hazard identification number (Kemler code):</b><br>· <b>EMS Number:</b><br>· <b>Segregation groups</b><br>· <b>Stowage Category</b><br>· <b>Stowage Code</b><br>· <b>Segregation Code</b> | Warning: Corrosive substances<br>80<br>F-A,S-B<br>(SGG1) Acids<br>A<br>SW2 Clear of living quarters.<br>SG36 Stow "separated from" SGG18-alkalis.<br>SG49 Stow "separated from" SGG6-cyanides |
| · <b>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</b> Not applicable.  |   |
| · <b>Transport/Additional information:</b>  |   |
| · <b>ADR</b><br>· <b>Excepted quantities (EQ)</b>   | Code: E1<br>Maximum net quantity per inner packaging: 30 ml<br>Maximum net quantity per outer packaging: 1000 ml  |
| · <b>IMDG</b><br>· <b>Limited quantities (LQ)</b><br>· <b>Excepted quantities (EQ)</b>  | 5L<br>Code: E1<br>Maximum net quantity per inner packaging: 30 ml<br>Maximum net quantity per outer packaging: 1000 ml  |
| · <b>UN "Model Regulation":</b>   | UN 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID), 8, III   |

## 15 Regulatory information

- **Safety, health and environmental regulations/legislation specific for the substance or mixture** No further relevant information available.  
 · **Sara**

|  |   |        |
|--|---|--------|
| · <b>Section 313 (Specific toxic chemical listings):</b> |   |        |
| 7697-37-2  | nitric acid   |        |
| 7439-92-1  | lead  |        |
| 7782-49-2  | selenium  |        |
| 7440-43-9  | cadmium   |        |
| 7440-66-6  | zinc  |        |
| 7439-96-5  | manganese   |        |
| 7440-41-7  | beryllium   |        |
| · <b>TSCA (Toxic Substances Control Act):</b>            |   |        |
| 7732-18-5  | water, distilled, conductivity or of similar purity | ACTIVE |
| 7439-92-1  | lead  | ACTIVE |
| 7782-49-2  | selenium  | ACTIVE |
| 7440-43-9  | cadmium   | ACTIVE |

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|           |           |        |
|-----------|-----------|--------|
| 7440-66-6 | zinc      | ACTIVE |
| 7439-96-5 | manganese | ACTIVE |
| 7440-41-7 | beryllium | ACTIVE |

· **Hazardous Air Pollutants**

|           |           |
|-----------|-----------|
| 7439-92-1 | lead      |
| 7439-96-5 | manganese |

· **Proposition 65**

· **Chemicals known to cause cancer:**

|           |           |
|-----------|-----------|
| 7439-92-1 | lead      |
| 7440-43-9 | cadmium   |
| 7440-41-7 | beryllium |

· **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for males:**

|           |         |
|-----------|---------|
| 7440-43-9 | cadmium |
|-----------|---------|

· **Chemicals known to cause developmental toxicity:**

|           |         |
|-----------|---------|
| 7440-43-9 | cadmium |
|-----------|---------|

· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**

|           |           |                         |
|-----------|-----------|-------------------------|
| 7439-92-1 | lead      | B2                      |
| 7782-49-2 | selenium  | D                       |
| 7440-43-9 | cadmium   | B1                      |
| 7440-66-6 | zinc      | D, I, II                |
| 7439-96-5 | manganese | D                       |
| 7440-41-7 | beryllium | B1, K/L(inh), CBD(oral) |

· **TLV (Threshold Limit Value)**

|           |         |    |
|-----------|---------|----|
| 7439-92-1 | lead    | A3 |
| 7440-43-9 | cadmium | A2 |

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**

|           |         |
|-----------|---------|
| 7440-43-9 | cadmium |
|-----------|---------|

· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

· **Hazard pictograms**



GHS07

· **Signal word** Warning

· **Hazard statements**

H315 Causes skin irritation.

H319 Causes serious eye irritation.

· **Precautionary statements**

P264 Wash thoroughly after handling.

P280 Wear eye protection / face protection.

P302+P352 If on skin: Wash with plenty of water.

P321 Specific treatment (see on this label).

P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P332+P313 If skin irritation occurs: Get medical advice/attention.

P362+P364 Take off contaminated clothing and wash it before reuse.

P337+P313 If eye irritation persists: Get medical advice/attention.

· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

**16 Other information**

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Department issuing SDS:** product safety department

· **Contact:**

Spex CertiPrep, LLC.

1-732-549-7144

· **Date of preparation / last revision** 02/15/2023

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**Abbreviations and acronyms:**

ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)  
 IMDG: International Maritime Code for Dangerous Goods  
 DOT: US Department of Transportation  
 IATA: International Air Transport Association  
 EINECS: European Inventory of Existing Commercial Chemical Substances  
 ELINCS: European List of Notified Chemical Substances  
 CAS: Chemical Abstracts Service (division of the American Chemical Society)  
 NFPA: National Fire Protection Association (USA)  
 HMIS: Hazardous Materials Identification System (USA)  
 VOC: Volatile Organic Compounds (USA, EU)  
 LC50: Lethal concentration, 50 percent  
 LD50: Lethal dose, 50 percent  
 PBT: Persistent, Bioaccumulative and Toxic  
 vPvB: very Persistent and very Bioaccumulative  
 NIOSH: National Institute for Occupational Safety  
 OSHA: Occupational Safety & Health  
 TLV: Threshold Limit Value  
 PEL: Permissible Exposure Limit  
 REL: Recommended Exposure Limit  
 BEI: Biological Exposure Limit  
 Skin Irritation 2: Skin corrosion/irritation – Category 2  
 Eye Irritation 2A: Serious eye damage/eye irritation – Category 2A