Safety Data Sheet
acc. to OSHA HCS

Printing date 09/21/2017 *Reviewed on 09/21/2017*

1 Identification

· **Product identifier**

· **Product Name: ICP-MS Initial Calibration Verification Standard 3**

· **Part Number:** CL-ICV-3
· **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

· **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**

GHS05 Corrosion

Skin Corr. 1B H314 Causes severe skin burns and eye damage.
Eye Dam. 1 H318 Causes serious eye damage.

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

GHS05

· **Signal word** Danger

· **Hazard-determining components of labeling:**
nitric acid
· **Hazard statements**
H314 Causes severe skin burns and eye damage.
· **Precautionary statements**
Do not breathe dusts or mists.
If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Immediately call a POISON CENTER/doctor.
Store locked up.
Dispose of contents/container in accordance with local/regional/national/international regulations.
· **Classification system:**
· **NFPA ratings (scale 0 - 4)**

Health = 3
Fire = 0
Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**

Health = 3
Fire = 0
Reactivity = 0

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

(Contd. on page 2)

Safety Data Sheet
acc. to OSHA HCS

Printing date 09/21/2017 Reviewed on 09/21/2017

Product Name: ICP-MS Initial Calibration Verification Standard 3

(Contd. of page 1)

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	5.0%

· **Chemical identification of the substance/preparation**		
87-69-4	(+)-tartaric acid	0.9%
7439-89-6	iron	0.01%
7439-95-4	magnesium	0.01%
7440-09-7	Potassium from Potassium nitrate	0.01%
7440-23-5	Sodium from Sodium carbonate	0.01%
7440-70-2	Calcium from Calcium carbonate	0.01%
7782-49-2	selenium	0.005%
7429-90-5	aluminium	0.001%
7439-92-1	Lead from Lead Oxide	0.001%
7439-96-5	manganese	0.001%
7440-02-0	nickel	0.001%
7440-22-4	silver	0.001%
7440-28-0	Thallium from Thallium nitrate	0.001%
7440-36-0	antimony	0.001%
7440-38-2	arsenic	0.001%
7440-39-3	Barium from Barium carbonate	0.001%
7440-41-7	Beryllium from Beryllium Acetate	0.001%
7440-43-9	cadmium (non-pyrophoric)	0.001%
7440-47-3	Chromium from Chromium(III) nitrate nonahydrate	0.001%
7440-48-4	cobalt	0.001%
7440-50-8	copper	0.001%
7440-62-2	Vanadium from Ammonium trioxovanadate	0.001%
7440-66-6	zinc powder -zinc dust (stabilized)	0.001%
7732-18-5	water, distilled, conductivity or of similar purity	94.029%

4 First-aid measures

· **Description of first aid measures**
· **General information:** Immediately remove any clothing soiled by the product.
· **After inhalation:** In case of unconsciousness place patient stably in side position for transportation.
· **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
· **After eye contact:** Rinse opened eye for several minutes under running water. Then consult a doctor.
· **After swallowing:** Drink copious amounts of water and provide fresh air. Immediately call a doctor.
· **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** Wear protective equipment. Keep unprotected persons away.
· **Environmental precautions:** 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).
Use neutralizing agent.

(Contd. on page 3)

Safety Data Sheet
acc. to OSHA HCS

Product Name: ICP-MS Initial Calibration Verification Standard 3

(Contd. of page 2)

Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.

· **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:**		
7697-37-2	nitric acid	0.16 ppm
87-69-4	(+)-tartaric acid	1.6 mg/m3
7439-89-6	iron	3.2 mg/m3
7439-95-4	magnesium	18 mg/m3
7440-09-7	Potassium from Potassium nitrate	2.3 mg/m3
7440-23-5	Sodium from Sodium carbonate	13 mg/m3
7782-49-2	selenium	0.6 mg/m3
7439-92-1	Lead from Lead Oxide	0.15 mg/m3
7439-96-5	manganese	3 mg/m3
7440-02-0	nickel	4.5 mg/m3
7440-22-4	silver	0.3 mg/m3
7440-28-0	Thallium from Thallium nitrate	0.06 mg/m3
7440-36-0	antimony	1.5 mg/m3
7440-38-2	arsenic	1.5 mg/m3
7440-39-3	Barium from Barium carbonate	1.5 mg/m3
7440-41-7	Beryllium from Beryllium Acetate	0.0023 mg/m3
7440-43-9	cadmium (non-pyrophoric)	0.10 mg/m3
7440-47-3	Chromium from Chromium(III) nitrate nonahydrate	1.5 mg/m3
7440-48-4	cobalt	0.18 mg/m3
7440-50-8	copper	3 mg/m3
7440-62-2	Vanadium from Ammonium trioxovanadate	3 mg/m3
7440-66-6	zinc powder -zinc dust (stabilized)	6 mg/m3

· **PAC-2:**		
7697-37-2	nitric acid	24 ppm
87-69-4	(+)-tartaric acid	17 mg/m3
7439-89-6	iron	35 mg/m3
7439-95-4	magnesium	200 mg/m3
7440-09-7	Potassium from Potassium nitrate	25 mg/m3
7440-23-5	Sodium from Sodium carbonate	140 mg/m3
7782-49-2	selenium	6.6 mg/m3
7439-92-1	Lead from Lead Oxide	120 mg/m3
7439-96-5	manganese	5 mg/m3
7440-02-0	nickel	50 mg/m3
7440-22-4	silver	170 mg/m3
7440-28-0	Thallium from Thallium nitrate	3.3 mg/m3
7440-36-0	antimony	13 mg/m3
7440-38-2	arsenic	17 mg/m3
7440-39-3	Barium from Barium carbonate	180 mg/m3
7440-41-7	Beryllium from Beryllium Acetate	0.025 mg/m3
7440-43-9	cadmium (non-pyrophoric)	0.76 mg/m3
7440-47-3	Chromium from Chromium(III) nitrate nonahydrate	17 mg/m3
7440-48-4	cobalt	2 mg/m3
7440-50-8	copper	33 mg/m3
7440-62-2	Vanadium from Ammonium trioxovanadate	5.8 mg/m3
7440-66-6	zinc powder -zinc dust (stabilized)	21 mg/m3

· **PAC-3:**		
7697-37-2	nitric acid	92 ppm
87-69-4	(+)-tartaric acid	100 mg/m3
7439-89-6	iron	150 mg/m3

(Contd. on page 4)

Safety Data Sheet
acc. to OSHA HCS

Printing date 09/21/2017 Reviewed on 09/21/2017

Product Name: ICP-MS Initial Calibration Verification Standard 3

(Contd. of page 3)

7439-95-4	magnesium	1,200 mg/m3
7440-09-7	Potassium from Potassium nitrate	150 mg/m3
7440-23-5	Sodium from Sodium carbonate	870 mg/m3
7782-49-2	selenium	40 mg/m3
7439-92-1	Lead from Lead Oxide	700 mg/m3
7439-96-5	manganese	1,800 mg/m3
7440-02-0	nickel	99 mg/m3
7440-22-4	silver	990 mg/m3
7440-28-0	Thallium from Thallium nitrate	20 mg/m3
7440-36-0	antimony	80 mg/m3
7440-38-2	arsenic	100 mg/m3
7440-39-3	Barium from Barium carbonate	1,100 mg/m3
7440-41-7	Beryllium from Beryllium Acetate	0.1 mg/m3
7440-43-9	cadmium (non-pyrophoric)	4.7 mg/m3
7440-47-3	Chromium from Chromium(III) nitrate nonahydrate	99 mg/m3
7440-48-4	cobalt	20 mg/m3
7440-50-8	copper	200 mg/m3
7440-62-2	Vanadium from Ammonium trioxovanadate	35 mg/m3
7440-66-6	zinc powder -zinc dust (stabilized)	120 mg/m3

7 Handling and storage

· **Handling:**
· **Precautions for safe handling**
Ensure good ventilation/exhaustion at the workplace.
Prevent formation of aerosols.
· **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:**	
7697-37-2 nitric acid	
PEL	Long-term value: 5 mg/m³, 2 ppm
REL	Short-term value: 10 mg/m³, 4 ppm Long-term value: 5 mg/m³, 2 ppm
TLV	Short-term value: 10 mg/m³, 4 ppm Long-term value: 5.2 mg/m³, 2 ppm

· **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 and skin.
· **Breathing equipment:**
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

(Contd. on page 5)

Safety Data Sheet
acc. to OSHA HCS

Product Name: ICP-MS Initial Calibration Verification Standard 3

(Contd. of page 4)

· **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.

· **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:	83 °C (181 °F)
· **Flash point:**	Not applicable.
· **Flammability (solid, gaseous):**	Not applicable.
· **Ignition temperature:**	
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 mm Hg)
· **Density**	Not applicable.
· **Relative density**	Not applicable.
· **Vapor density**	Not applicable.
· **Evaporation rate**	Not applicable.
· **Solubility in / Miscibility with**	
Water:	Not miscible or difficult to mix.
· **Partition coefficient (n-octanol/water):**	Not applicable.
· **Viscosity:**	
Dynamic:	Not applicable.
Kinematic:	Not applicable.
· **Solvent content:**	
Organic solvents:	0.0 %
Water:	94.0 %
Solids content:	1.0 %

(Contd. on page 6)

Safety Data Sheet
acc. to OSHA HCS

Product Name: ICP-MS Initial Calibration Verification Standard 3

(Contd. of page 5)

· **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.

11 Toxicological information

· **Information on toxicological effects**
· **Acute toxicity:**
· **Primary irritant effect:**
· **on the skin:** Caustic effect on skin and mucous membranes.
· **on the eye:** Strong caustic effect.
· **Sensitization:** No sensitizing effects known.
· **Additional toxicological information:**
The product shows the following dangers according to internally approved calculation methods for preparations:
Corrosive
Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**		
7782-49-2	selenium	3
7439-92-1	Lead from Lead Oxide	2B
7440-02-0	nickel	2B
7440-38-2	arsenic	1
7440-41-7	Beryllium from Beryllium Acetate	1
7440-43-9	cadmium (non-pyrophoric)	1
7440-47-3	Chromium from Chromium(III) nitrate nonahydrate	3
7440-48-4	cobalt	2B

· **NTP (National Toxicology Program)**		
7439-92-1	Lead from Lead Oxide	R
7440-02-0	nickel	R
7440-38-2	arsenic	K
7440-41-7	Beryllium from Beryllium Acetate	K
7440-43-9	cadmium (non-pyrophoric)	K
7440-48-4	cobalt	R

· **OSHA-Ca (Occupational Safety & Health Administration)**	
7440-38-2	arsenic
7440-43-9	cadmium (non-pyrophoric)

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 2 (Self-assessment): hazardous for water
Do not allow product to reach ground water, water course or sewage system.
Must not reach bodies of water or drainage ditch undiluted or unneutralized.
Danger to drinking water if even small quantities leak into the ground.

(Contd. on page 7)

Safety Data Sheet
acc. to OSHA HCS

Product Name: ICP-MS Initial Calibration Verification Standard 3

(Contd. of page 6)

· **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.

14 Transport information

· **UN-Number**	
· **DOT, ADR, IMDG, IATA**	UN3264
· **UN proper shipping name**	
· **DOT**	Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid solution)
· **ADR**	3264 Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid solution)
· **IMDG, IATA**	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID SOLUTION)
· **Transport hazard class(es)**	
· **DOT**	
· **Class**	8 Corrosive substances
· **Label**	8
· **ADR, IMDG, IATA**	
· **Class**	8 Corrosive substances
· **Label**	8
· **Packing group**	
· **DOT, ADR, IMDG, IATA**	III
· **Environmental hazards:**	Not applicable.
· **Special precautions for user**	Warning: Corrosive substances
· **Danger code (Kemler):**	80
· **EMS Number:**	F-A,S-B
· **Segregation groups**	Acids
· **Stowage Category**	A
· **Stowage Code**	SW2 Clear of living quarters.
· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**	Not applicable.
· **Transport/Additional information:**	
· **ADR**	
· **Excepted quantities (EQ)**	Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
· **IMDG**	
· **Limited quantities (LQ)**	5L

(Contd. on page 8)

Safety Data Sheet
acc. to OSHA HCS

Printing date 09/21/2017 Reviewed on 09/21/2017

Product Name: ICP-MS Initial Calibration Verification Standard 3

(Contd. of page 7)

· **Excepted quantities (EQ)**	Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
· **UN "Model Regulation":**	UN 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID SOLUTION), 8, III

15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**
· **Sara**

· **Section 355 (extremely hazardous substances):**

7697-37-2	nitric acid

· **Section 313 (Specific toxic chemical listings):**

7697-37-2	nitric acid
7782-49-2	selenium
7429-90-5	aluminium
7439-92-1	Lead from Lead Oxide
7439-96-5	manganese
7440-02-0	nickel
7440-22-4	silver
7440-28-0	Thallium from Thallium nitrate
7440-36-0	antimony
7440-38-2	arsenic
7440-39-3	Barium from Barium carbonate
7440-41-7	Beryllium from Beryllium Acetate
7440-43-9	cadmium (non-pyrophoric)
7440-47-3	Chromium from Chromium(III) nitrate nonahydrate
7440-48-4	cobalt
7440-50-8	copper
7440-62-2	Vanadium from Ammonium trioxovanadate
7440-66-6	zinc powder -zinc dust (stabilized)

· **TSCA (Toxic Substances Control Act):**
All ingredients are listed.

· **Proposition 65**

· **Chemicals known to cause cancer:**

7439-92-1	Lead from Lead Oxide
7440-02-0	nickel
7440-38-2	arsenic
7440-41-7	Beryllium from Beryllium Acetate
7440-43-9	cadmium (non-pyrophoric)
7440-48-4	cobalt

· **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 (non-pyrophoric)

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

7440-43-9	cadmium (non-pyrophoric)

· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**

7782-49-2	selenium	D
7439-92-1	Lead from Lead Oxide	B2
7439-96-5	manganese	D
7440-22-4	silver	D
7440-38-2	arsenic	A
7440-39-3	Barium from Barium carbonate	D, CBD(inh), NL(oral)

(Contd. on page 9)

Safety Data Sheet
acc. to OSHA HCS

Printing date 09/21/2017 Reviewed on 09/21/2017

Product Name: ICP-MS Initial Calibration Verification Standard 3

(Contd. of page 8)

7440-41-7	Beryllium from Beryllium Acetate	B1, K/L(inh), CBD(oral)
7440-43-9	cadmium (non-pyrophoric)	B1
7440-50-8	copper	D
7440-66-6	zinc powder -zinc dust (stabilized)	D, I, II

· **TLV (Threshold Limit Value established by ACGIH)**		
7429-90-5	aluminium	A4
7439-92-1	Lead from Lead Oxide	A3
7440-02-0	nickel	A5
7440-38-2	arsenic	A1
7440-39-3	Barium from Barium carbonate	A4
7440-43-9	cadmium (non-pyrophoric)	A2
7440-48-4	cobalt	A3

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**	
7440-02-0	nickel
7440-38-2	arsenic
7440-43-9	cadmium (non-pyrophoric)

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

GHS05

· **Signal word** Danger

· **Hazard-determining components of labeling:**
nitric acid
· **Hazard statements**
H314 Causes severe skin burns and eye damage.
· **Precautionary statements**
Do not breathe dusts or mists.
If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Immediately call a POISON CENTER/doctor.
Store locked up.
Dispose of contents/container in accordance with local/regional/national/international regulations.
· **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** 09/21/2017 / -
· **Abbreviations and acronyms:**
ADR: Accord européen sur le transport 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
ACGIH: American Conference of Governmental Industrial Hygienists
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)
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
Skin Corr. 1B: Skin corrosion/irritation – Category 1B
Eye Dam. 1: Serious eye damage/eye irritation – Category 1