

## 1 Identification

- **Product identifier**
- **Product Name:** Spike Sample Standard 1 (water)
- **Part Name:** CL-SPIKE-1
- **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**



GHS05 Corrosion

Skin Corrosion 1B H314 Causes severe skin burns and eye damage.

Eye Damage 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**  
P260 Do not breathe dusts or mists.  
P264 Wash thoroughly after handling.  
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.  
P321 Specific treatment (see on this label).  
P363 Wash contaminated clothing before reuse.  
P405 Store locked up.  
P501 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

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- **Other hazards**
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **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	5.0%
7664-39-3	hydrofluoric acid	0.1%

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

7732-18-5	water, distilled, conductivity or of similar purity	94.5575%
87-69-4	(+)-tartaric acid	0.15%
7439-89-6	iron	0.05%
7440-39-3	barium	0.025%
7440-66-6	zinc	0.025%
7439-96-5	manganese	0.01%
7440-02-0	nickel	0.01%
7440-36-0	antimony	0.01%
7440-47-3	chromium	0.01%
7440-48-4	cobalt	0.01%
7440-50-8	copper	0.01%
7440-62-2	vanadium	0.01%
7439-92-1	lead	0.005%
7440-38-2	arsenic	0.005%
7440-22-4	silver	0.0025%
7440-28-0	thallium	0.0025%
7440-41-7	beryllium	0.0025%
7440-43-9	cadmium	0.0025%
7782-49-2	selenium	0.0025%

### 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. Then 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** During heating or in case of fire poisonous gases are produced.
- **Advice for firefighters**
- **Protective equipment:** Mouth respiratory protective device.

### 6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
- Mount respiratory protective device.
- Wear protective equipment. Keep unprotected persons away.
- **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).

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Use neutralizing agent.

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**

<b>PAC-1:</b>		
7697-37-2	nitric acid	0.16 ppm
87-69-4	(+)-tartaric acid	1.6 mg/m <sup>3</sup>
7664-39-3	hydrofluoric acid	1.0 ppm
7439-89-6	iron	3.2 mg/m <sup>3</sup>
7440-39-3	barium	1.5 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>
7440-02-0	nickel	4.5 mg/m <sup>3</sup>
7440-36-0	antimony	1.5 mg/m <sup>3</sup>
7440-47-3	chromium	1.5 mg/m <sup>3</sup>
7440-48-4	cobalt	0.18 mg/m <sup>3</sup>
7440-50-8	copper	3 mg/m <sup>3</sup>
7440-62-2	vanadium	3 mg/m <sup>3</sup>
7439-92-1	lead	0.15 mg/m <sup>3</sup>
7440-38-2	arsenic	1.5 mg/m <sup>3</sup>
7440-22-4	silver	0.3 mg/m <sup>3</sup>
7440-28-0	thallium	0.06 mg/m <sup>3</sup>
7440-41-7	beryllium	0.0023 mg/m <sup>3</sup>
7440-43-9	cadmium	0.10 mg/m <sup>3</sup>
7782-49-2	selenium	0.6 mg/m <sup>3</sup>
<b>PAC-2:</b>		
7697-37-2	nitric acid	24 ppm
87-69-4	(+)-tartaric acid	17 mg/m <sup>3</sup>
7664-39-3	hydrofluoric acid	24 ppm
7439-89-6	iron	35 mg/m <sup>3</sup>
7440-39-3	barium	180 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>
7440-02-0	nickel	50 mg/m <sup>3</sup>
7440-36-0	antimony	13 mg/m <sup>3</sup>
7440-47-3	chromium	17 mg/m <sup>3</sup>
7440-48-4	cobalt	2 mg/m <sup>3</sup>
7440-50-8	copper	33 mg/m <sup>3</sup>
7440-62-2	vanadium	5.8 mg/m <sup>3</sup>
7439-92-1	lead	120 mg/m <sup>3</sup>
7440-38-2	arsenic	17 mg/m <sup>3</sup>
7440-22-4	silver	170 mg/m <sup>3</sup>
7440-28-0	thallium	3.3 mg/m <sup>3</sup>
7440-41-7	beryllium	0.025 mg/m <sup>3</sup>
7440-43-9	cadmium	0.76 mg/m <sup>3</sup>
7782-49-2	selenium	6.6 mg/m <sup>3</sup>
<b>PAC-3:</b>		
7697-37-2	nitric acid	92 ppm
87-69-4	(+)-tartaric acid	100 mg/m <sup>3</sup>
7664-39-3	hydrofluoric acid	44 ppm
7439-89-6	iron	150 mg/m <sup>3</sup>
7440-39-3	barium	1,100 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>

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7440-02-0	nickel	99 mg/m <sup>3</sup>
7440-36-0	antimony	80 mg/m <sup>3</sup>
7440-47-3	chromium	99 mg/m <sup>3</sup>
7440-48-4	cobalt	20 mg/m <sup>3</sup>
7440-50-8	copper	200 mg/m <sup>3</sup>
7440-62-2	vanadium	35 mg/m <sup>3</sup>
7439-92-1	lead	700 mg/m <sup>3</sup>
7440-38-2	arsenic	100 mg/m <sup>3</sup>
7440-22-4	silver	990 mg/m <sup>3</sup>
7440-28-0	thallium	20 mg/m <sup>3</sup>
7440-41-7	beryllium	0.1 mg/m <sup>3</sup>
7440-43-9	cadmium	4.7 mg/m <sup>3</sup>
7782-49-2	selenium	40 mg/m <sup>3</sup>

## 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:** Keep respiratory protective device available.
- **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.

7664-39-3 hydrofluoric acid	
PEL	Long-term value: 1* mg/m <sup>3</sup> , 3 ppm as F, *sulfuric acid
REL	Long-term value: 2.5 mg/m <sup>3</sup> , 3 ppm Ceiling limit value: 5* mg/m <sup>3</sup> , 6* ppm *15-min, as F
TLV	Long-term value: 0.5 ppm Ceiling limit value: 2 ppm as F; Skin, BEI

- **Ingredients with biological limit values:**

7664-39-3 hydrofluoric acid	
BEI	3 mg/g creatinine Medium: urine Time: prior to shift Parameter: Fluorides (background, nonspecific)
	10 mg/g creatinine Medium: urine Time: end of shift Parameter: Fluorides (background, nonspecific)

- **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.

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Avoid contact with the eyes and skin.

**Respiratory protection:**

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.

**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:**

<b>Form:</b>	Liquid
<b>Color:</b>	According to product specification
<b>Odor:</b>	Characteristic
<b>Odour Threshold:</b>	Not applicable.

**pH-value:** Not applicable.

**Change in condition**

<b>Melting point/Melting range:</b>	Undetermined.
<b>Boiling point/Boiling range:</b>	83 °C (181.4 °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:**

<b>Lower:</b>	Not applicable.
<b>Upper:</b>	Not applicable.

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

**Density at 20 °C (68 °F)** 1.02849 g/cm<sup>3</sup> (8.58275 lbs/gal)

**Relative density** Not applicable.

**Vapor density** Not applicable.

**Evaporation rate** Not applicable.

**Solubility in / Miscibility with**

<b>Water:</b>	Fully miscible.
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**Partition coefficient (n-octanol/water):** Not applicable.

**Viscosity:**

<b>Dynamic:</b>	Not applicable.
<b>Kinematic:</b>	Not applicable.

**Solvent content:**

<b>Water:</b>	94.6 %
<b>VOC content:</b>	0.00 %

<b>Solids content:</b>	0.3 %
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· **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:**

· **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:** Caustic effect on skin and mucous membranes.
- **on the eye:**  
Strong caustic effect.  
Strong irritant with the danger of severe eye injury.
- **Sensitization:** No sensitizing effects known.
- **Additional toxicological information:**  
The product shows the following dangers according to internally approved calculation methods for preparations:  
Corrosive  
Irritant

- **Carcinogenic categories**

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

7440-02-0	nickel	2B
7440-47-3	chromium	3
7440-48-4	cobalt	2B
7439-92-1	lead	2B
7440-38-2	arsenic	1
7440-41-7	beryllium	1
7440-43-9	cadmium	1
7782-49-2	selenium	3

· **NTP (National Toxicology Program)**

7440-02-0	nickel	R
7440-48-4	cobalt	R
7439-92-1	lead	R
7440-38-2	arsenic	K
7440-41-7	beryllium	K
7440-43-9	cadmium	K

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

7440-38-2	arsenic
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 2 (Self-assessment): hazardous for water  
Do not allow product to reach ground water, water course or sewage system.

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Must not reach bodies of water or drainage ditch undiluted or unneutralized.

Danger to drinking water if even small quantities leak into the ground.

· **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

· <b>UN-Number</b> · <b>DOT, ADR, IMDG, IATA</b>	UN3264
· <b>UN proper shipping name</b> · <b>DOT</b> · <b>ADR</b> · <b>IMDG, IATA</b>	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)
· <b>Transport hazard class(es)</b> · <b>DOT</b>	
	
· <b>Class</b> · <b>Label</b>	8 Corrosive substances 8
· <b>ADR, IMDG, IATA</b>	
	
· <b>Class</b> · <b>Label</b>	8 Corrosive substances 8
· <b>Packing group</b> · <b>DOT, ADR, IMDG, IATA</b>	III
· <b>Environmental hazards:</b>	Not applicable.
· <b>Special precautions for user</b> · <b>Hazard identification number (Kemler code):</b> · <b>EMS Number:</b> · <b>Segregation groups</b> · <b>Stowage Category</b> · <b>Stowage Code</b> · <b>Segregation Code</b>	Warning: Corrosive substances 80 F-A,S-B (SGG1) Acids A SW2 Clear of living quarters. SG36 Stow "separated from" SGG18-alkalis. 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> · <b>Excepted quantities (EQ)</b>	Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
· <b>IMDG</b> · <b>Limited quantities (LQ)</b>	5L

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· 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), 8, III

## 15 Regulatory information

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

· Section 313 (Specific toxic chemical listings):	
7697-37-2	nitric acid
7664-39-3	hydrofluoric acid
7440-39-3	barium
7440-66-6	zinc
7439-96-5	manganese
7440-02-0	nickel
7440-36-0	antimony
7440-47-3	chromium
7440-48-4	cobalt
7440-50-8	copper
7440-62-2	vanadium
7439-92-1	lead
7440-38-2	arsenic
7440-22-4	silver
7440-28-0	thallium
7440-41-7	beryllium
7440-43-9	cadmium
7782-49-2	selenium

· TSCA (Toxic Substances Control Act):	
All components have the value ACTIVE.	

· Hazardous Air Pollutants	
7664-39-3	hydrofluoric acid
7439-96-5	manganese
7440-48-4	cobalt
7439-92-1	lead

· Proposition 65	
· Chemicals known to cause cancer:	
7440-02-0	nickel
7440-48-4	cobalt
7439-92-1	lead
7440-38-2	arsenic
7440-41-7	beryllium
7440-43-9	cadmium

· 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)		
7440-39-3	barium	D, CBD(inh), NL(oral)
7440-66-6	zinc	D, I, II
7439-96-5	manganese	D
7440-50-8	copper	D

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7439-92-1	lead	B2
7440-38-2	arsenic	A
7440-22-4	silver	D
7440-41-7	beryllium	B1, K/L(inh), CBD(oral)
7440-43-9	cadmium	B1
7782-49-2	selenium	D

· **TLV (Threshold Limit Value)**

7440-39-3	barium	A4
7440-02-0	nickel	A5
7440-48-4	cobalt	A3
7439-92-1	lead	A3
7440-38-2	arsenic	A1
7440-43-9	cadmium	A2

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

7440-02-0	nickel
7440-38-2	arsenic
7440-43-9	cadmium

· **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**

P260 Do not breathe dusts or mists.

P264 Wash thoroughly after handling.

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.

P321 Specific treatment (see on this label).

P363 Wash contaminated clothing before reuse.

P405 Store locked up.

P501 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** 05/18/2023

· **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

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*NIOSH: National Institute for Occupational Safety*

*OSHA: Occupational Safety & Health*

*TLV: Threshold Limit Value*

*PEL: Permissible Exposure Limit*

*REL: Recommended Exposure Limit*

*BEL: Biological Exposure Limit*

*Skin Corrosion 1B: Skin corrosion/irritation – Category 1B*

*Eye Damage 1: Serious eye damage/eye irritation – Category 1*

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US —