

1 Identification

- **Product identifier**
- **Product Name:** Tuning Solution 1
- **Part Number:** CL-TUNE-1
- **Application of the substance / the mixture** For Laboratory Use Only
- **Uses advised against** Not for Human or Animal Use
- **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

Eye Damage 1 H318 Causes serious eye damage.



GHS07

Skin Irritation 2 H315 Causes skin irritation.

- **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:**
hydrochloric acid
nitric acid
- **Hazard statements**
H315 Causes skin irritation.
H318 Causes serious eye damage.
- **Precautionary statements**
P264 Wash thoroughly after handling.
P280 Wear eye protection / face protection.
P302+P352 If on skin: Wash with plenty of water.
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).
P362+P364 Take off contaminated clothing and wash it before reuse.
P332+P313 If skin irritation occurs: Get medical advice/attention.
- **Classification system:**
- **NFPA ratings (scale 0 - 4)**



Health = 3
Fire = 0
Reactivity = 0

Printing date 06/04/2024

Reviewed on 06/04/2024

Product Name: Tuning Solution 1

(Contd. of page 1)

· **HMIS-ratings (scale 0 - 4)**

HEALTH	3	Health = *3
FIRE	0	Fire = 0
REACTIVITY	0	Reactivity = 0

- **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:**

7647-01-0	hydrochloric acid	5.0%
7697-37-2	nitric acid	2.0%

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

7732-18-5	water, distilled, conductivity or of similar purity	92.988%
7439-92-1	lead	0.001%
7439-93-2	lithium	0.001%
7439-95-4	magnesium	0.001%
7440-16-6	rhodium	0.001%
7440-28-0	thallium	0.001%
7440-39-3	barium	0.001%
7440-41-7	Beryllium from Beryllium Acetate	0.001%
7440-45-1	cerium	0.001%
7440-48-4	cobalt	0.001%
7440-61-1	Uranium from Uranyl Nitrate Hexahydrate	0.001%
7440-65-5	yttrium	0.001%
7440-74-6	indium	0.001%

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** 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:**
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).
Use neutralizing agent.
Dispose contaminated material as waste according to section 13.

(Contd. on page 3)

Printing date 06/04/2024

Reviewed on 06/04/2024

Product Name: Tuning Solution 1

(Contd. of page 2)

· **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:		
7647-01-0	hydrochloric acid	1.8 ppm
7697-37-2	nitric acid	0.16 ppm
7439-92-1	lead	0.15 mg/m ³
7439-93-2	lithium	3.3 mg/m ³
7439-95-4	magnesium	18 mg/m ³
7440-16-6	rhodium	3 mg/m ³
7440-28-0	thallium	0.06 mg/m ³
7440-39-3	barium	1.5 mg/m ³
7440-41-7	Beryllium from Beryllium Acetate	0.0023 mg/m ³
7440-45-1	cerium	30 mg/m ³
7440-48-4	cobalt	0.18 mg/m ³
7440-61-1	Uranium from Uranyl Nitrate Hexahydrate	0.6 mg/m ³
7440-65-5	yttrium	3 mg/m ³
7440-74-6	indium	0.3 mg/m ³

· PAC-2:		
7647-01-0	hydrochloric acid	22 ppm
7697-37-2	nitric acid	24 ppm
7439-92-1	lead	120 mg/m ³
7439-93-2	lithium	36 mg/m ³
7439-95-4	magnesium	200 mg/m ³
7440-16-6	rhodium	33 mg/m ³
7440-28-0	thallium	3.3 mg/m ³
7440-39-3	barium	180 mg/m ³
7440-41-7	Beryllium from Beryllium Acetate	0.025 mg/m ³
7440-45-1	cerium	330 mg/m ³
7440-48-4	cobalt	2 mg/m ³
7440-61-1	Uranium from Uranyl Nitrate Hexahydrate	5 mg/m ³
7440-65-5	yttrium	33 mg/m ³
7440-74-6	indium	3.3 mg/m ³

· PAC-3:		
7647-01-0	hydrochloric acid	100 ppm
7697-37-2	nitric acid	92 ppm
7439-92-1	lead	700 mg/m ³
7439-93-2	lithium	220 mg/m ³
7439-95-4	magnesium	1,200 mg/m ³
7440-16-6	rhodium	200 mg/m ³
7440-28-0	thallium	20 mg/m ³
7440-39-3	barium	1,100 mg/m ³
7440-41-7	Beryllium from Beryllium Acetate	0.1 mg/m ³
7440-45-1	cerium	2,000 mg/m ³
7440-48-4	cobalt	20 mg/m ³
7440-61-1	Uranium from Uranyl Nitrate Hexahydrate	30 mg/m ³
7440-65-5	yttrium	200 mg/m ³
7440-74-6	indium	20 mg/m ³

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.

(Contd. on page 4)

Printing date 06/04/2024

Reviewed on 06/04/2024

Product Name: Tuning Solution 1

(Contd. of page 3)

- **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 section 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.

7647-01-0 hydrochloric acid

PEL	Ceiling limit value: 7 mg/m ³ , 5 ppm
REL	Ceiling limit value: 7 mg/m ³ , 5 ppm
TLV	Ceiling limit value: 2 ppm
A4	

- **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.
- **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.

(Contd. on page 5)

Printing date 06/04/2024

Reviewed on 06/04/2024

Product Name: Tuning Solution 1

(Contd. of page 4)

· Ignition temperature:	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)	1.01833 g/cm ³ (8.49796 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:	93.0 %
VOC content:	0.00 %
Solids content:	0.0 %
· 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:		
7647-01-0 hydrochloric acid		
Oral	LD50	900 mg/kg (rabbit)

- **Primary irritant effect:**
- **on the skin:**
Caustic effect on skin and mucous membranes.
Irritant to skin and mucous membranes.
- **on the eye:** 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:
Irritant

- **Carcinogenic categories**

· IARC (International Agency for Research on Cancer)		
7647-01-0	hydrochloric acid	3
7439-92-1	lead	2B
7440-41-7	Beryllium from Beryllium Acetate	1
7440-48-4	cobalt	2B
· NTP (National Toxicology Program)		
7439-92-1	lead	R
7440-41-7	Beryllium from Beryllium Acetate	K
7440-48-4	cobalt	R

(Contd. on page 6)

Printing date 06/04/2024

Reviewed on 06/04/2024

Product Name: Tuning Solution 1

(Contd. of page 5)

· OSHA-Ca (Occupational Safety & Health Administration)

None of the ingredients is listed.



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.
Must not reach bodies of water or drainage ditch undiluted or unneutralized.
- **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	UN3264
· DOT, ADR, IMDG, IATA	
· UN proper shipping name	Corrosive liquid, acidic, inorganic, n.o.s. (Hydrochloric acid, Nitric acid)
· DOT	3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (HYDROCHLORIC ACID, NITRIC ACID)
· ADR	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (HYDROCHLORIC ACID, NITRIC ACID)
· IMDG, IATA	
· 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	II
· Environmental hazards:	Not applicable.
· Special precautions for user	Warning: Corrosive substances
· Hazard identification number (Kemler code):	80
· EMS Number:	F-A,S-B
· Segregation groups	(SGG1) Acids

(Contd. on page 7)

Printing date 06/04/2024

Reviewed on 06/04/2024

Product Name: Tuning Solution 1

(Contd. of page 6)

· Stowage Category	B
· Stowage Code	SW2 Clear of living quarters.
· Segregation Code	SG36 Stow "separated from" SGG18-alkalis. SG49 Stow "separated from" SGG6-cyanides
· Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
· Transport/Additional information:	
· ADR	
· Excepted quantities (EQ)	Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml
· IMDG	
· Limited quantities (LQ)	1L
· Excepted quantities (EQ)	Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml
· UN "Model Regulation":	UN 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (HYDROCHLORIC ACID, NITRIC ACID), 8, II

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):		
7647-01-0	hydrochloric acid	
7697-37-2	nitric acid	
7439-92-1	lead	
7439-93-2	lithium	
7440-28-0	thallium	
7440-39-3	barium	
7440-41-7	Beryllium from Beryllium Acetate	
7440-48-4	cobalt	
· TSCA (Toxic Substances Control Act):		
All components have the value ACTIVE.		
· Hazardous Air Pollutants		
7647-01-0	hydrochloric acid	
7439-92-1	lead	
7440-48-4	cobalt	
· Proposition 65		
· Chemicals known to cause cancer:		
7439-92-1	lead	
7440-41-7	Beryllium from Beryllium Acetate	
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:		
None of the ingredients is listed.		
· Chemicals known to cause developmental toxicity:		
7439-93-2	lithium	
· Carcinogenic categories		
· EPA (Environmental Protection Agency)		
7439-92-1	lead	B2
7440-39-3	barium	D, CBD(inh), NL(oral)
7440-41-7	Beryllium from Beryllium Acetate	B1, K/L(inh), CBD(oral)
· TLV (Threshold Limit Value)		
7647-01-0	hydrochloric acid	A4
7439-92-1	lead	A3
7440-39-3	barium	A4

(Contd. on page 8)

Printing date 06/04/2024

Reviewed on 06/04/2024

Product Name: Tuning Solution 1

(Contd. of page 7)

7440-48-4	cobalt	A3
7440-61-1	Uranium from Uranyl Nitrate Hexahydrate	A1

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

7440-61-1 Uranium from Uranyl Nitrate Hexahydrate

· **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:**

hydrochloric acid

nitric acid

· **Hazard statements**

H315 Causes skin irritation.

H318 Causes serious eye damage.

· **Precautionary statements**

P264 Wash thoroughly after handling.

P280 Wear eye protection / face protection.

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

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).

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

P332+P313 If skin irritation occurs: 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** 06/04/2024

· **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

Skin Irritation 2: Skin corrosion/irritation – Category 2

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