

Safety Data Sheet
acc. to OSHA HCS

Printing date 04/16/2018

Reviewed on 04/16/2018

1 Identification

- **Product identifier**
- **Product Name: Tuning Solution 1**
- **Part Number: CL-TUNE-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
- **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 Irrit. 2 H315 Causes skin irritation.
Eye Irrit. 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**
Wash thoroughly after handling.
Wear protective gloves / eye protection / face protection.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Specific treatment (see on this label).
If skin irritation occurs: Get medical advice/attention.
If eye irritation persists: Get medical advice/attention.
- **Classification system:**
- **NFPA ratings (scale 0 - 4)**



Health = 2
Fire = 0
Reactivity = 0

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

HEALTH	2	<i>Health = 2</i>
FIRE	0	<i>Fire = 0</i>
REACTIVITY	0	<i>Reactivity = 0</i>

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

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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**

7440-74-6	indium	0.001%
7440-39-3	Barium from Barium carbonate	0.001%
7440-45-1	Cerium from Cerium(III) nitrate hexahydrate	0.001%
7440-28-0	Thallium from Thallium nitrate	0.001%
7439-95-4	magnesium	0.001%
7440-48-4	cobalt	0.001%
7440-16-6	Rhodium from Rhodium trichloride trihydrate	0.001%
7440-65-5	Yttrium from Yttrium oxide	0.001%
7439-93-2	Lithium from Lithium carbonate	0.001%
7440-61-1	Uranium from Uranyl Nitrate Hexahydrate	0.001%
7440-41-7	Beryllium from Beryllium Acetate	0.001%
7439-92-1	Lead from Lead Oxide	0.001%
7732-18-5	water, distilled, conductivity or of similar purity	92.988%

4 First-aid measures

- **Description of first aid measures**
- **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. 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:** 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).
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:**

7647-01-0	hydrochloric acid	1.8 ppm
7697-37-2	nitric acid	0.16 ppm
7440-74-6	indium	0.3 mg/m ³
7440-39-3	Barium from Barium carbonate	1.5 mg/m ³
7440-45-1	Cerium from Cerium(III) nitrate hexahydrate	30 mg/m ³

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7440-28-0	Thallium from Thallium nitrate	0.06 mg/m ³
7439-95-4	magnesium	18 mg/m ³
7440-48-4	cobalt	0.18 mg/m ³
7440-16-6	Rhodium from Rhodium trichloride trihydrate	3 mg/m ³
7440-65-5	Yttrium from Yttrium oxide	3 mg/m ³
7439-93-2	Lithium from Lithium carbonate	3.3 mg/m ³
7440-61-1	Uranium from Uranyl Nitrate Hexahydrate	0.6 mg/m ³
7440-41-7	Beryllium from Beryllium Acetate	0.0023 mg/m ³
7439-92-1	Lead from Lead Oxide	0.15 mg/m ³

· PAC-2:

7647-01-0	hydrochloric acid	22 ppm
7697-37-2	nitric acid	24 ppm
7440-74-6	indium	3.3 mg/m ³
7440-39-3	Barium from Barium carbonate	180 mg/m ³
7440-45-1	Cerium from Cerium(III) nitrate hexahydrate	330 mg/m ³
7440-28-0	Thallium from Thallium nitrate	3.3 mg/m ³
7439-95-4	magnesium	200 mg/m ³
7440-48-4	cobalt	2 mg/m ³
7440-16-6	Rhodium from Rhodium trichloride trihydrate	33 mg/m ³
7440-65-5	Yttrium from Yttrium oxide	33 mg/m ³
7439-93-2	Lithium from Lithium carbonate	36 mg/m ³
7440-61-1	Uranium from Uranyl Nitrate Hexahydrate	5 mg/m ³
7440-41-7	Beryllium from Beryllium Acetate	0.025 mg/m ³
7439-92-1	Lead from Lead Oxide	120 mg/m ³

· PAC-3:

7647-01-0	hydrochloric acid	100 ppm
7697-37-2	nitric acid	92 ppm
7440-74-6	indium	20 mg/m ³
7440-39-3	Barium from Barium carbonate	1,100 mg/m ³
7440-45-1	Cerium from Cerium(III) nitrate hexahydrate	2,000 mg/m ³
7440-28-0	Thallium from Thallium nitrate	20 mg/m ³
7439-95-4	magnesium	1,200 mg/m ³
7440-48-4	cobalt	20 mg/m ³
7440-16-6	Rhodium from Rhodium trichloride trihydrate	200 mg/m ³
7440-65-5	Yttrium from Yttrium oxide	200 mg/m ³
7439-93-2	Lithium from Lithium carbonate	220 mg/m ³
7440-61-1	Uranium from Uranyl Nitrate Hexahydrate	30 mg/m ³
7440-41-7	Beryllium from Beryllium Acetate	0.1 mg/m ³
7439-92-1	Lead from Lead Oxide	700 mg/m ³

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.

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· Control parameters

· Components with limit values that require monitoring at the workplace:

7647-01-0 hydrochloric acidPEL Ceiling limit value: 7 mg/m³, 5 ppmREL Ceiling limit value: 7 mg/m³, 5 ppmTLV Ceiling limit value: 2.98 mg/m³, 2 ppm**7697-37-2 nitric acid**PEL Long-term value: 5 mg/m³, 2 ppmREL Short-term value: 10 mg/m³, 4 ppmLong-term value: 5 mg/m³, 2 ppmTLV Short-term value: 10 mg/m³, 4 ppmLong-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.

· 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:

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.

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· 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 (17.3 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:	Not miscible or difficult to mix.
· 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:**
- **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)		
7647-01-0	hydrochloric acid	3
7440-48-4	cobalt	2B
7440-41-7	Beryllium from Beryllium Acetate	1
7439-92-1	Lead from Lead Oxide	2B
· NTP (National Toxicology Program)		
7440-48-4	cobalt	R
7440-41-7	Beryllium from Beryllium Acetate	K
7439-92-1	Lead from Lead Oxide	R

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· **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.
- **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. (Hydrochloric acid, Nitric acid solution) |
| · ADR | 3264 Corrosive liquid, acidic, inorganic, n.o.s. (Hydrochloric acid, Nitric acid solution) |
| · IMDG, IATA | CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (HYDROCHLORIC ACID, 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 |

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· 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
· 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. (HYDROCHLORIC ACID, NITRIC ACID SOLUTION), 8, III

15 Regulatory information

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

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

7647-01-0	hydrochloric acid
7697-37-2	nitric acid
7440-39-3	Barium from Barium carbonate
7440-28-0	Thallium from Thallium nitrate
7440-48-4	cobalt
7439-93-2	Lithium from Lithium carbonate
7440-41-7	Beryllium from Beryllium Acetate
7439-92-1	Lead from Lead Oxide

· **TSCA (Toxic Substances Control Act):**

All ingredients are listed.

· **TSCA new (21st Century Act) (Substances not listed)**

· **Proposition 65**

· **Chemicals known to cause cancer:**

7440-48-4	cobalt
7440-41-7	Beryllium from Beryllium Acetate
7439-92-1	Lead from Lead Oxide

· **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 from Lithium carbonate
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· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**

7440-39-3	Barium from Barium carbonate	D, CBD(inh), NL(oral)
7440-41-7	Beryllium from Beryllium Acetate	B1, K/L(inh), CBD(oral)
7439-92-1	Lead from Lead Oxide	B2

· **TLV (Threshold Limit Value established by ACGIH)**

7647-01-0	hydrochloric acid	A4
7440-39-3	Barium from Barium carbonate	A4
7440-48-4	cobalt	A3
7440-61-1	Uranium from Uranyl Nitrate Hexahydrate	A1

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7439-92-1	Lead from Lead Oxide	A3
· 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**



GHS07

- **Signal word** Warning
- **Hazard statements**
H315 Causes skin irritation.
H319 Causes serious eye irritation.
- **Precautionary statements**
Wash thoroughly after handling.
Wear protective gloves / eye protection / face protection.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Specific treatment (see on this label).
If skin irritation occurs: Get medical advice/attention.
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** 04/16/2018 / -

- **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)
 VOC: Volatile Organic Compounds (USA, EU)
 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 Irrit. 2: Skin corrosion/irritation – Category 2
 Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A

US