

Safety Data Sheet
acc. to OSHA HCS

Printing date 01/22/2019

Reviewed on 01/22/2019

1 Identification

- **Product identifier**
- **Trade name:** Element 2 Stock Tuning Solution (µg/mL)
- **Article number:** ICP-MS-TS-19
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**
High-Purity Standards
P.O. Box 41727
Charleston, SC 29423
Telephone: (843) 767-7900
FAX: (843) 767-7906
- **Information department:** Product safety department
- **Emergency telephone number:**
INFOTRAC
Emergency telephone numbers 1-800-535-5053
Other emergency telephone numbers 1-352-323-3500

2 Hazard(s) identification

- **Classification of the substance or mixture**



GHS05 Corrosion

- Met. Corr.1 H290 May be corrosive to metals.
- Skin Corr. 1A 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**
H290 May be corrosive to metals.
H314 Causes severe skin burns and eye damage.
- **Precautionary statements**
Keep only in original container.
Do not breathe dusts or mists.
Wash thoroughly after handling.
Wear protective gloves/protective clothing/eye protection/face protection.
If swallowed: Rinse mouth. Do NOT induce vomiting.
If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

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IF INHALED: Remove person to fresh air and keep comfortable for breathing.
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.
Specific treatment (see on this label).
Wash contaminated clothing before reuse.
Absorb spillage to prevent material damage.
Store locked up.
Store in corrosive resistant container with a resistant inner liner.
Dispose of contents/container in accordance with local/regional/national/international regulations.

Classification system:

· **NFPA ratings (scale 0 - 4)**



· **HMIS-ratings (scale 0 - 4)**



· **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	2.0%
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· **Chemical identification of the substance/preparation**

7647-01-0	hydrochloric acid	0.49%
7439-89-6	iron	0.0001%
10043-35-3	boric acid	0.0001%
7440-55-3	gallium	0.0001%
554-13-2	lithium carbonate	0.0001%
12032-20-1	lutetium oxide	0.0001%
7757-79-1	potassium nitrate	0.0001%
20765-98-4	Rhodium(III) chloride hydrate	0.0001%
12060-08-1	scandium oxide	0.0001%
497-19-8	sodium carbonate	0.0001%
7440-28-0	thallium	0.0001%
10102-06-4	Uranyl nitrate	0.0001%

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1314-36-9	yttrium oxide	0.0001%
7440-48-4	cobalt	0.0001%
7440-74-6	indium	0.0001%
513-77-9	barium carbonate	0.0001%
7732-18-5	water, distilled, conductivity or of similar purity	97.509%

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**
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:** No special measures required.
- **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 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
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7647-01-0	hydrochloric acid	1.8 ppm
7439-89-6	iron	3.2 mg/m ³
10043-35-3	boric acid	6 mg/m ³
7440-55-3	gallium	30 mg/m ³
554-13-2	lithium carbonate	3.1 mg/m ³
12032-20-1	lutetium oxide	30 mg/m ³
7757-79-1	potassium nitrate	9 mg/m ³
12060-08-1	scandium oxide	30 mg/m ³
497-19-8	sodium carbonate	7.6 mg/m ³
7440-28-0	thallium	0.06 mg/m ³
10102-06-4	Uranyl nitrate	0.99 mg/m ³
1314-36-9	yttrium oxide	3.8 mg/m ³
7440-48-4	cobalt	0.18 mg/m ³
7440-74-6	indium	0.3 mg/m ³
513-77-9	barium carbonate	2.2 mg/m ³

· PAC-2:

7697-37-2	nitric acid	24 ppm
7647-01-0	hydrochloric acid	22 ppm
7439-89-6	iron	35 mg/m ³
10043-35-3	boric acid	23 mg/m ³
7440-55-3	gallium	330 mg/m ³
554-13-2	lithium carbonate	34 mg/m ³
12032-20-1	lutetium oxide	330 mg/m ³
7757-79-1	potassium nitrate	100 mg/m ³
12060-08-1	scandium oxide	330 mg/m ³
497-19-8	sodium carbonate	83 mg/m ³
7440-28-0	thallium	3.3 mg/m ³
10102-06-4	Uranyl nitrate	5.5 mg/m ³
1314-36-9	yttrium oxide	43 mg/m ³
7440-48-4	cobalt	2 mg/m ³
7440-74-6	indium	3.3 mg/m ³
513-77-9	barium carbonate	270 mg/m ³

· PAC-3:

7697-37-2	nitric acid	92 ppm
7647-01-0	hydrochloric acid	100 ppm
7439-89-6	iron	150 mg/m ³
10043-35-3	boric acid	830 mg/m ³
7440-55-3	gallium	2,000 mg/m ³
554-13-2	lithium carbonate	210 mg/m ³
12032-20-1	lutetium oxide	2,000 mg/m ³

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7757-79-1	potassium nitrate	600 mg/m ³
12060-08-1	scandium oxide	2,000 mg/m ³
497-19-8	sodium carbonate	500 mg/m ³
7440-28-0	thallium	20 mg/m ³
10102-06-4	Uranyl nitrate	33 mg/m ³
1314-36-9	yttrium oxide	260 mg/m ³
7440-48-4	cobalt	20 mg/m ³
7440-74-6	indium	20 mg/m ³
513-77-9	barium carbonate	1,600 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:** 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:**

7697-37-2 nitric acid

PEL	Long-term value: 5 mg/m ³ , 2 ppm
REL	Short-term value: 10 mg/m ³ , 4 ppm Long-term value: 5 mg/m ³ , 2 ppm
TLV	Short-term value: 10 mg/m ³ , 4 ppm Long-term value: 5.2 mg/m ³ , 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.
Avoid contact with the eyes and skin.

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· **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.

· **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:	Colorless
Odor:	Characteristic
Odor threshold:	Not determined.

· **pH-value:** Not determined.

· **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 determined.

· **Auto igniting:** Product is not selfigniting.

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

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· Explosion limits:	
Lower:	Not determined.
Upper:	Not determined.
· Vapor pressure at 20 °C (68 °F):	23 hPa (17.3 mm Hg)
· Density:	Not determined.
· Relative density	Not determined.
· Vapor density	Not determined.
· Evaporation rate	Not determined.
· Solubility in / Miscibility with Water:	Not miscible or difficult to mix.
· Partition coefficient (n-octanol/water):	Not determined.
· Viscosity:	
Dynamic:	Not determined.
Kinematic:	Not determined.
· Solvent content:	
Water:	97.5 %
VOC content:	0.00 %
	0.0 g/l / 0.00 lb/gal
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)
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- **Primary irritant effect:**
- **on the skin:** Strong caustic effect on skin and mucous membranes.
- **on the eye:**
Strong caustic effect.
Strong irritant with the danger of severe eye injury.

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· **Sensitization:** No sensitizing effects known.

· **Additional toxicological information:**

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

Corrosive

Irritant

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)**

7647-01-0	hydrochloric acid	3
7440-48-4	cobalt	2B

· **NTP (National Toxicology Program)**

7440-48-4	cobalt	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:**

Generally not hazardous for water

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.

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14 Transport information

· UN-Number · DOT, ADR, IMDG, IATA	UN1760
· UN proper shipping name · DOT · ADR · IMDG, IATA	Corrosive liquids, n.o.s. (Nitric acid, Hydrochloric acid) 1760 Corrosive liquids, n.o.s. (Nitric acid, Hydrochloric acid) CORROSIVE LIQUID, N.O.S. (NITRIC ACID, HYDROCHLORIC ACID)
· Transport hazard class(es) · DOT	
	
· Class · Label	8 Corrosive substances 8
· ADR, IMDG, IATA	
	
· Class · Label	8 Corrosive substances 8
· Packing group · DOT, ADR, IMDG, IATA	III
· Environmental hazards:	Not applicable.
· Special precautions for user · Danger code (Kemler): · EMS Number: · Segregation groups · Stowage Category · Stowage Code	Warning: Corrosive substances 80 F-A,S-B Acids A SW2 Clear of living quarters.
· Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable.
· Transport/Additional information: · DOT	
· Quantity limitations	On passenger aircraft/rail: 5 L On cargo aircraft only: 60 L
· ADR · Excepted quantities (EQ)	Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml

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· 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 1760 CORROSIVE LIQUIDS, N.O.S. (NITRIC ACID, HYDROCHLORIC ACID), 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
7647-01-0	hydrochloric acid

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

7697-37-2	nitric acid
7647-01-0	hydrochloric acid
554-13-2	lithium carbonate
7757-79-1	potassium nitrate
7440-28-0	thallium
7440-48-4	cobalt
513-77-9	barium carbonate

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

7697-37-2	nitric acid
7647-01-0	hydrochloric acid
7439-89-6	iron
10043-35-3	boric acid
7440-55-3	gallium
554-13-2	lithium carbonate
12032-20-1	lutetium oxide
7757-79-1	potassium nitrate
12060-08-1	scandium oxide
497-19-8	sodium carbonate
7440-28-0	thallium
10102-06-4	Uranyl nitrate
1314-36-9	yttrium oxide
7440-48-4	cobalt
7440-74-6	indium
513-77-9	barium carbonate
7732-18-5	water, distilled, conductivity or of similar purity

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· **Proposition 65**

· **Chemicals known to cause cancer:**

7440-48-4	cobalt
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· **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:**

554-13-2	lithium carbonate
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· **Carcinogenic categories**

· **EPA (Environmental Protection Agency) (Substances not listed)**

7697-37-2	nitric acid
7647-01-0	hydrochloric acid
7439-89-6	iron
7440-55-3	gallium
554-13-2	lithium carbonate
12032-20-1	lutetium oxide
7757-79-1	potassium nitrate
20765-98-4	Rhodium(III) chloride hydrate
12060-08-1	scandium oxide
497-19-8	sodium carbonate
7440-28-0	thallium
10102-06-4	Uranyl nitrate
1314-36-9	yttrium oxide
7440-48-4	cobalt
7440-74-6	indium
7732-18-5	water, distilled, conductivity or of similar purity

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

7647-01-0	hydrochloric acid	A4
10043-35-3	boric acid	A4
7440-48-4	cobalt	A3
513-77-9	barium carbonate	A4

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

None of the ingredients is listed.

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

· **Hazard pictograms**



GHS05

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- **Signal word** *Danger*
- **Hazard-determining components of labeling:**
nitric acid
- **Hazard statements**
H290 May be corrosive to metals.
H314 Causes severe skin burns and eye damage.
- **Precautionary statements**
Keep only in original container.
Do not breathe dusts or mists.
Wash thoroughly after handling.
Wear protective gloves/protective clothing/eye protection/face protection.
If swallowed: Rinse mouth. Do NOT induce vomiting.
If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
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.
Specific treatment (see on this label).
Wash contaminated clothing before reuse.
Absorb spillage to prevent material damage.
Store locked up.
Store in corrosive resistant container with a resistant inner liner.
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:** *Environment protection department.*
- **Contact:**
High-Purity Standards
Tel: 843-767-7900
Fax: 843-767-7906
- **Date of preparation / last revision** *01/22/2019 / -*
- **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)
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

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