Safety Data Sheet
acc. to OSHA HCS

Printing date 12/12/2019 Reviewed on 12/12/2019

1 Identification

· **Product identifier**

· **Trade name: AG-7500 series Tuning Sol**

· **Article number:** ICP-MS-TS-9-A

· **Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
High-Purity Standards
7221 Investment Drive, North Charleston, SC 29418 United States
Telephone: +1-843-767-7900
Fax: +1-843-767-7906
highpuritystandards.com
Email: info@highpuritystandards.com

· **Information department:** Product safety department
· **Emergency telephone number:**
INFOTRAC
Emergency telephone numbers1-800-535-5053
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.

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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.

· **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.*

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**		
543-81-7	beryllium acetate	0.002%
7440-38-2	arsenic	0.002%
7440-43-9	cadmium	0.002%
7440-66-6	zinc	0.002%
7439-92-1	lead	0.001%

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7439-95-4	magnesium	0.001%
7440-02-0	nickel	0.001%
12060-08-1	scandium oxide	0.0005%
497-19-8	sodium carbonate	0.0005%
513-77-9	barium carbonate	0.0005%
554-13-2	lithium carbonate	0.0005%
6156-78-1	Manganese(II) acetate tetrahydrate	0.0005%
7429-90-5	aluminium	0.0005%
7440-28-0	thallium	0.0005%
7440-29-1	thorium	0.0005%
7440-47-3	chromium	0.0005%
7440-48-4	cobalt	0.0005%
7440-50-8	copper	0.0005%
7440-69-9	bismuth	0.0005%
7440-74-6	indium	0.0005%
7803-55-6	Ammonium Vanadate	0.0005%
10042-76-9	strontium nitrate	0.0005%
10102-06-4	Uranyl nitrate	0.0005%
12032-20-1	lutetium oxide	0.0005%
7440-65-5	yttrium	0.00025%
7440-64-4	ytterbium	0.00025%
7732-18-5	water, distilled, conductivity or of similar purity	94.98%

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.

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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:** 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 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
7440-38-2	arsenic	1.5 mg/m³
7440-43-9	cadmium	0.10 mg/m³
7440-66-6	zinc	6 mg/m³
7439-92-1	lead	0.15 mg/m³
7439-95-4	magnesium	18 mg/m³
7440-02-0	nickel	4.5 mg/m³
12060-08-1	scandium oxide	30 mg/m³
497-19-8	sodium carbonate	7.6 mg/m³
513-77-9	barium carbonate	2.2 mg/m³
554-13-2	lithium carbonate	3.1 mg/m³
6156-78-1	Manganese(II) acetate tetrahydrate	13 mg/m³
7440-28-0	thallium	0.06 mg/m³
7440-29-1	thorium	30 mg/m³
7440-47-3	chromium	1.5 mg/m³

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7440-48-4	cobalt	0.18 mg/m³
7440-50-8	copper	3 mg/m³
7440-69-9	bismuth	15 mg/m³
7440-74-6	indium	0.3 mg/m³
7803-55-6	Ammonium Vanadate	0.01 mg/m³
10042-76-9	strontium nitrate	5.7 mg/m³
10102-06-4	Uranyl nitrate	0.99 mg/m³
12032-20-1	lutetium oxide	30 mg/m³
7440-65-5	yttrium	3 mg/m³

· **PAC-2:**

7697-37-2	nitric acid	24 ppm
7440-38-2	arsenic	17 mg/m³
7440-43-9	cadmium	0.76 mg/m³
7440-66-6	zinc	21 mg/m³
7439-92-1	lead	120 mg/m³
7439-95-4	magnesium	200 mg/m³
7440-02-0	nickel	50 mg/m³
12060-08-1	scandium oxide	330 mg/m³
497-19-8	sodium carbonate	83 mg/m³
513-77-9	barium carbonate	270 mg/m³
554-13-2	lithium carbonate	34 mg/m³
6156-78-1	Manganese(II) acetate tetrahydrate	22 mg/m³
7440-28-0	thallium	3.3 mg/m³
7440-29-1	thorium	330 mg/m³
7440-47-3	chromium	17 mg/m³
7440-48-4	cobalt	2 mg/m³
7440-50-8	copper	33 mg/m³
7440-69-9	bismuth	170 mg/m³
7440-74-6	indium	3.3 mg/m³
7803-55-6	Ammonium Vanadate	0.11 mg/m³
10042-76-9	strontium nitrate	62 mg/m³
10102-06-4	Uranyl nitrate	5.5 mg/m³
12032-20-1	lutetium oxide	330 mg/m³
7440-65-5	yttrium	33 mg/m³

· **PAC-3:**

7697-37-2	nitric acid	92 ppm
7440-38-2	arsenic	100 mg/m³

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7440-43-9	cadmium	4.7 mg/m³
7440-66-6	zinc	120 mg/m³
7439-92-1	lead	700 mg/m³
7439-95-4	magnesium	1,200 mg/m³
7440-02-0	nickel	99 mg/m³
12060-08-1	scandium oxide	2,000 mg/m³
497-19-8	sodium carbonate	500 mg/m³
513-77-9	barium carbonate	1,600 mg/m³
554-13-2	lithium carbonate	210 mg/m³
6156-78-1	Manganese(II) acetate tetrahydrate	740 mg/m³
7440-28-0	thallium	20 mg/m³
7440-29-1	thorium	2,000 mg/m³
7440-47-3	chromium	99 mg/m³
7440-48-4	cobalt	20 mg/m³
7440-50-8	copper	200 mg/m³
7440-69-9	bismuth	990 mg/m³
7440-74-6	indium	20 mg/m³
7803-55-6	Ammonium Vanadate	80 mg/m³
10042-76-9	strontium nitrate	370 mg/m³
10102-06-4	Uranyl nitrate	33 mg/m³
12032-20-1	lutetium oxide	2,000 mg/m³
7440-65-5	yttrium	200 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:** 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.

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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.
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.
· **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.

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· **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:	83 °C (181.4 °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.
· **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.

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· **Solvent content:**	
Water:	95.0 %
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:**
· **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.
· **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)**		
543-81-7	beryllium acetate	1
7440-38-2	arsenic	1
7440-43-9	cadmium	1
7439-92-1	lead	2B
7440-02-0	nickel	2B
7440-29-1	thorium	1

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7440-47-3	chromium	3
7440-48-4	cobalt	2B

· **NTP (National Toxicology Program)**

543-81-7	beryllium acetate	K
7440-38-2	arsenic	K
7440-43-9	cadmium	K
7439-92-1	lead	R
7440-02-0	nickel	R
7440-48-4	cobalt	R

· **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 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.

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14 Transport information

· **UN-Number**	
· **DOT, ADR, IMDG, IATA**	UN3264
· **UN proper shipping name**	
· **DOT**	Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid)
· **ADR**	3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID)
· **IMDG, IATA**	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID)
· **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:**	
· **DOT**	
· **Quantity limitations**	On passenger aircraft/rail: 5 L On cargo aircraft only: 60 L

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· **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. (NITRIC 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

· **Section 313 (Specific toxic chemical listings):**	
7697-37-2	nitric acid
543-81-7	beryllium acetate
7440-38-2	arsenic
7440-43-9	cadmium
7440-66-6	zinc
7439-92-1	lead
7440-02-0	nickel
513-77-9	barium carbonate
554-13-2	lithium carbonate
7429-90-5	aluminium
7440-28-0	thallium
7440-47-3	chromium
7440-48-4	cobalt
7440-50-8	copper
7803-55-6	Ammonium Vanadate
10042-76-9	strontium nitrate

· **TSCA (Toxic Substances Control Act):**		
7697-37-2	nitric acid	ACTIVE
7440-38-2	arsenic	ACTIVE

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7440-43-9	cadmium	ACTIVE
7440-66-6	zinc	ACTIVE
7439-92-1	lead	ACTIVE
7439-95-4	magnesium	ACTIVE
7440-02-0	nickel	ACTIVE
12060-08-1	scandium oxide	ACTIVE
497-19-8	sodium carbonate	ACTIVE
513-77-9	barium carbonate	ACTIVE
554-13-2	lithium carbonate	ACTIVE
7429-90-5	aluminium	ACTIVE
7440-28-0	thallium	ACTIVE
7440-29-1	thorium	ACTIVE
7440-47-3	chromium	ACTIVE
7440-48-4	cobalt	ACTIVE
7440-50-8	copper	ACTIVE
7440-69-9	bismuth	ACTIVE
7440-74-6	indium	ACTIVE
7803-55-6	Ammonium Vanadate	ACTIVE
10042-76-9	strontium nitrate	ACTIVE
10102-06-4	Uranyl nitrate	ACTIVE
12032-20-1	lutetium oxide	ACTIVE
7440-65-5	yttrium	ACTIVE
7440-64-4	ytterbium	ACTIVE
7732-18-5	water, distilled, conductivity or of similar purity	ACTIVE

· **Hazardous Air Pollutants**

7439-92-1	lead
7440-48-4	cobalt

· **Proposition 65**

· **Chemicals known to cause cancer:**

543-81-7	beryllium acetate
7440-38-2	arsenic
7440-43-9	cadmium
7439-92-1	lead
7440-02-0	nickel
7440-48-4	cobalt

· **Chemicals known to cause reproductive toxicity for females:**

7439-92-1	lead

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· **Chemicals known to cause reproductive toxicity for males:**	
7440-43-9	cadmium
7439-92-1	lead

· **Chemicals known to cause developmental toxicity:**	
7440-43-9	cadmium
7439-92-1	lead
554-13-2	lithium carbonate

· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**		
7440-38-2	arsenic	A
7440-43-9	cadmium	B1
7440-66-6	zinc	D, I, II
7439-92-1	lead	B2
513-77-9	barium carbonate	D, CBD(inh), NL(oral)
7440-47-3	chromium	D
7440-50-8	copper	D

· **TLV (Threshold Limit Value established by ACGIH)**		
7440-38-2	arsenic	A1
7440-43-9	cadmium	A2
7439-92-1	lead	A3
7440-02-0	nickel	A5
513-77-9	barium carbonate	A4
7429-90-5	aluminium	A4
7440-47-3	chromium	A4
7440-48-4	cobalt	A3

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**	
543-81-7	beryllium acetate
7440-38-2	arsenic
7440-43-9	cadmium
7440-02-0	nickel
10102-06-4	Uranyl nitrate

· **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** 12/12/2019 / -
· **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)

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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
Met. Corr.1: Corrosive to metals – Category 1
Skin Corr. 1A: Skin corrosion/irritation – Category 1A
Eye Dam. 1: Serious eye damage/eye irritation – Category 1

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1 Identification

· **Product identifier**

· **Trade name: AG-7500 series Tuning Sol**

· **Article number:** ICP-MS-TS-9-B

· **Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
High-Purity Standards
7221 Investment Drive, North Charleston, SC 29418 United States
Telephone: +1-843-767-7900
Fax: +1-843-767-7906
highpuritystandards.com
Email: info@highpuritystandards.com

· **Information department:** Product safety department
· **Emergency telephone number:**
INFOTRAC
Emergency telephone numbers1-800-535-5053
Other emergency telephone numbers 1-352-323-3500

2 Hazard(s) identification

· **Classification of the substance or mixture**

GHS05 Corrosion

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

GHS07

Acute Tox. 4 H312 Harmful in contact with skin.
STOT SE 3 H335 May cause respiratory irritation.

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

GHS05 GHS07

· **Signal word** Danger

· **Hazard-determining components of labeling:**
hydrochloric acid
Hydrofluoric acid
nitric acid
· **Hazard statements**
H312 Harmful in contact with skin.

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Trade name: AG-7500 series Tuning Sol

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H314 Causes severe skin burns and eye damage.
H335 May cause respiratory irritation.

· **Precautionary statements**
Do not breathe dusts or mists.
Wash thoroughly after handling.
Use only outdoors or in a well-ventilated area.
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).
Take off contaminated clothing and wash it before reuse.
Wash contaminated clothing before reuse.
Store in a well-ventilated place. Keep container tightly closed.
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.

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	10.0%
7697-37-2	nitric acid	1.0%
7664-39-3	Hydrofluoric acid	0.49%

· **Chemical identification of the substance/preparation**		
7732-18-5	water, distilled, conductivity or of similar purity	88.503%
7439-98-7	molybdenum	0.001%
7440-05-3	palladium	0.001%

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7440-31-5	tin	0.001%
7440-36-0	antimony	0.001%
7440-56-4	germanium	0.001%
18746-63-9	Ammonium hexachlororuthenate(IV) Ruthenium	0.001%
7439-88-5	iridium	0.0005%
7440-32-6	titanium	0.0005%

4 First-aid measures

· **Description of first aid measures**
· **General information:**
Immediately remove any clothing soiled by the product.
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
· **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:** 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 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.

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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
7664-39-3	Hydrofluoric acid	1.0 ppm
7439-98-7	molybdenum	30 mg/m³
7440-05-3	palladium	6 mg/m³
7440-31-5	tin	6 mg/m³
7440-36-0	antimony	1.5 mg/m³
7440-56-4	germanium	3.2 mg/m³
7439-88-5	iridium	4.7 mg/m³
7440-32-6	titanium	30 mg/m³

· **PAC-2:**		
7647-01-0	hydrochloric acid	22 ppm
7697-37-2	nitric acid	24 ppm
7664-39-3	Hydrofluoric acid	24 ppm
7439-98-7	molybdenum	330 mg/m³
7440-05-3	palladium	66 mg/m³
7440-31-5	tin	67 mg/m³
7440-36-0	antimony	13 mg/m³
7440-56-4	germanium	35 mg/m³
7439-88-5	iridium	51 mg/m³
7440-32-6	titanium	330 mg/m³

· **PAC-3:**		
7647-01-0	hydrochloric acid	100 ppm
7697-37-2	nitric acid	92 ppm
7664-39-3	Hydrofluoric acid	44 ppm
7439-98-7	molybdenum	2,000 mg/m³
7440-05-3	palladium	400 mg/m³
7440-31-5	tin	400 mg/m³
7440-36-0	antimony	80 mg/m³
7440-56-4	germanium	170 mg/m³
7439-88-5	iridium	310 mg/m³
7440-32-6	titanium	2,000 mg/m³

7 Handling and storage

· **Handling:**

· **Precautions for safe handling**

Ensure good ventilation/exhaustion at the workplace.

Prevent formation of aerosols.

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· **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:**	
7647-01-0 hydrochloric acid	
PEL	Ceiling limit value: 7 mg/m³, 5 ppm
REL	Ceiling limit value: 7 mg/m³, 5 ppm
TLV	Ceiling limit value: 2.98 mg/m³, 2 ppm
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
7664-39-3 Hydrofluoric acid	
PEL	Long-term value: 3 ppm as F
REL	Long-term value: 2.5 mg/m³, 3 ppm Ceiling limit value: 5* mg/m³, 6* ppm *15-min, as F
TLV	Long-term value: 0.41 mg/m³, 0.5 ppm Ceiling limit value: 1.64 mg/m³, 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.

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· **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.
· **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:	Orange
· **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)

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· **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.
· **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:	88.5 %
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.

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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)
7664-39-3 Hydrofluoric acid		
Oral	LD50	1,276 mg/kg (rat)

· **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.
· **Sensitization:** No sensitizing effects known.
· **Additional toxicological information:**
The product shows the following dangers according to internally approved calculation methods for preparations:
Harmful
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

· **NTP (National Toxicology Program)**
None of the ingredients is listed.

· **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.

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· **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)
· **ADR**	3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (HYDROCHLORIC ACID, NITRIC ACID)
· **IMDG, IATA**	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (HYDROCHLORIC ACID, NITRIC ACID)
· **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
· **Danger code (Kemler):**	80
· **EMS Number:**	F-A,S-B
· **Segregation groups**	Acids

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· **Stowage Category**	B
· **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:**	
· **DOT**	
· **Quantity limitations**	On passenger aircraft/rail: 1 L On cargo aircraft only: 30 L
· **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**
· **Sara**

· **Section 355 (extremely hazardous substances):**	
7647-01-0	hydrochloric acid
7697-37-2	nitric acid
7664-39-3	Hydrofluoric acid

· **Section 313 (Specific toxic chemical listings):**	
7647-01-0	hydrochloric acid
7697-37-2	nitric acid
7664-39-3	Hydrofluoric acid
7440-36-0	antimony

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

· **Hazardous Air Pollutants**	
7647-01-0	hydrochloric acid
7664-39-3	Hydrofluoric acid

· **Proposition 65**

· **Chemicals known to cause cancer:**
None of the ingredients is listed.

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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:**
None of the ingredients is listed.

· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**
None of the ingredients is listed.

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

7647-01-0	hydrochloric acid	A4
7439-98-7	molybdenum	A3

· **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 GHS07

· **Signal word** Danger

· **Hazard-determining components of labeling:**
hydrochloric acid
Hydrofluoric acid
nitric acid
· **Hazard statements**
H312 Harmful in contact with skin.
H314 Causes severe skin burns and eye damage.
H335 May cause respiratory irritation.
· **Precautionary statements**
Do not breathe dusts or mists.
Wash thoroughly after handling.
Use only outdoors or in a well-ventilated area.
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).
Take off contaminated clothing and wash it before reuse.
Wash contaminated clothing before reuse.
Store in a well-ventilated place. Keep container tightly closed.

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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:** Environment protection department.
· **Contact:**
High-Purity Standards
Tel: 843-767-7900
Fax: 843-767-7906
· **Date of preparation / last revision** 10/15/2019 / -
· **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
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
BEI: Biological Exposure Limit
Acute Tox. 4: Acute toxicity – Category 4
Skin Corr. 1A: Skin corrosion/irritation – Category 1A
Eye Dam. 1: Serious eye damage/eye irritation – Category 1
STOT SE 3: Specific target organ toxicity (single exposure) – Category 3