

Safety Data Sheet

acc. to OSHA HCS

Printing date 06/11/2024

Reviewed on 06/11/2024

1 Identification

- **Product identifier**
- **Trade name:** All Titanium Alloys
Class B Etchant
- **Article number:** SWI008
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**
Aqua Solutions, Inc.
6913 Highway 225
DEER PARK, TX 77536
USA
800-256-2586
- **Information department:**
Technical Coordinator
Sherman Nelson shermann@aquasolutions.org
- **Emergency telephone number:**
Chemtrec: 800-424-9300
Canutec: 613-996-6666



2 Hazard(s) identification

- **Classification of the substance or mixture**



GHS06 Skull and crossbones

Acute Toxicity - Oral 3 H301 Toxic if swallowed.
 Acute Toxicity - Dermal 2 H310 Fatal in contact with skin.
 Acute Toxicity - Inhalation 3 H331 Toxic if inhaled.



GHS05 Corrosion

Skin Corrosion 1A H314 Causes severe skin burns and eye damage.
 Eye Damage 1 H318 Causes serious eye damage.

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



GHS05



GHS06

- **Signal word** Danger
- **Hazard-determining components of labeling:**
Nitric Acid
Hydrofluoric Acid 49-51% Aqueous Solution
- **Hazard statements**
Toxic if swallowed or if inhaled.
Fatal in contact with skin.
Causes severe skin burns and eye damage.

(Contd. on page 2)

Safety Data Sheet

acc. to OSHA HCS

Printing date 06/11/2024

Reviewed on 06/11/2024

Trade name: All Titanium Alloys
Class B Etchant

(Contd. of page 1)

· **Precautionary statements**

Do not breathe dusts or mists.

Do not get in eyes, on skin, or on clothing.

Wash thoroughly after handling.

Do not eat, drink or smoke when using this product.

Use only outdoors or in a well-ventilated area.

Wear protective gloves/protective clothing/eye protection/face protection.

If swallowed: Immediately call a poison center/doctor.

Specific treatment (see on this label).

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.

Call a poison center/doctor.

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.

Continue rinsing.

Take off immediately all contaminated clothing and wash it 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:**

CAS: 7697-37-2	Nitric Acid	35.0%
CAS: 7664-39-3	Hydrofluoric Acid 49-51% Aqueous Solution	3.0%

· **Table of Nonhazardous Ingredients**

CAS: 7732-18-5	Water	62.0%
----------------	-------	-------

US

(Contd. on page 3)

Safety Data Sheet

acc. to OSHA HCS

Printing date 06/11/2024

Reviewed on 06/11/2024

Trade name: All Titanium Alloys
Class B Etchant

(Contd. of page 2)

4 First-aid measures

- **Description of first aid measures**
- **General information:**
Immediately remove any clothing soiled by the product.
Remove breathing apparatus only after contaminated clothing have been completely removed.
In case of irregular breathing or respiratory arrest provide artificial respiration.
- **After inhalation:**
Supply fresh air or oxygen; call for doctor.
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:**
Do not induce vomiting; immediately call for medical help.
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:**
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.
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:**

CAS: 7697-37-2	Nitric Acid	0.16 ppm
CAS: 7664-39-3	Hydrofluoric Acid 49-51% Aqueous Solution	1.0 ppm

(Contd. on page 4)

Safety Data Sheet

acc. to OSHA HCS

Printing date 06/11/2024

Reviewed on 06/11/2024

Trade name: All Titanium Alloys
Class B Etchant

(Contd. of page 3)

· PAC-2:		
CAS: 7697-37-2	Nitric Acid	24 ppm
CAS: 7664-39-3	Hydrofluoric Acid 49-51% Aqueous Solution	24 ppm
· PAC-3:		
CAS: 7697-37-2	Nitric Acid	92 ppm
CAS: 7664-39-3	Hydrofluoric Acid 49-51% Aqueous Solution	44 ppm

7 Handling and storage

- **Handling:**
- **Precautions for safe handling**
Ensure good ventilation/exhaustion at the workplace.
Open and handle receptacle with care.
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 section 7.
- **Control parameters**

· Components with limit values that require monitoring at the workplace:	
CAS: 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: (4) NIC-0.025 ppm Long-term value: (2) ppm NIC-A4
CAS: 7664-39-3 Hydrofluoric Acid 49-51% Aqueous Solution	
PEL	Long-term value: 1* mg/m ³ , 3 ppm as F, *sulfuric acid
REL	Long-term value: 2.5 mg/m ³ , 3 ppm Ceiling limit value: 5* mg/m ³ , 6* ppm *15-min, as F
TLV	Long-term value: 0.5 ppm Ceiling limit value: 2 ppm as F; Skin, BEI

(Contd. on page 5)

US

Safety Data Sheet

acc. to OSHA HCS

Printing date 06/11/2024

Reviewed on 06/11/2024

Trade name: All Titanium Alloys
Class B Etchant

(Contd. of page 4)

· Ingredients with biological limit values:

CAS: 7664-39-3 Hydrofluoric Acid 49-51% Aqueous Solution

BEI	3 mg/g creatinine LD50 Intraperitoneal: urine Time: prior to shift LD50: Fluorides (background, nonspecific)
	10 mg/g creatinine LD50 Intraperitoneal: urine Time: end of shift LD50: Fluorides (background, nonspecific)

· Additional information: The lists that were valid during the creation were used as basis.

· Exposure controls

· Personal protective equipment:

· General protective and hygienic measures:

Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Store protective clothing separately.
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

· Body protection: Protective work clothing

US

(Contd. on page 6)

Safety Data Sheet

acc. to OSHA HCS

Printing date 06/11/2024

Reviewed on 06/11/2024

Trade name: All Titanium Alloys
Class B Etchant

(Contd. of page 5)

9 Physical and chemical properties

· Information on basic physical and chemical properties	
· General Information	
· Appearance:	
· Form:	Liquid
· Color:	Clear
· Odor:	Odorless
· 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.	
· Ignition temperature: 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 at 20 °C (68 °F): 1.18145 g/cm ³ (9.8592 lbs/gal)	
· Relative density Not determined.	
· Vapor density Not determined.	
· Evaporation rate Not determined.	
· Solubility in / Miscibility with	
· Water:	Fully miscible.
· Partition coefficient (n-octanol/water): Not determined.	
· Viscosity:	
· Dynamic:	Not determined.
· Kinematic:	Not determined.
· Solvent content:	
· Water:	62.0 %
· 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.

(Contd. on page 7)

Safety Data Sheet

acc. to OSHA HCS

Printing date 06/11/2024

Reviewed on 06/11/2024

Trade name: All Titanium Alloys
Class B Etchant

(Contd. of page 6)

- **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:**

ATE (Acute Toxicity Estimate)

Oral	LD50	167 mg/kg
Dermal	LD50	167 mg/kg
Inhalative	LC50/4h	8.57 mg/l

- **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:
Toxic
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)**

None of the ingredients is listed.

- **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.

(Contd. on page 8)

Safety Data Sheet

acc. to OSHA HCS

Printing date 06/11/2024

Reviewed on 06/11/2024

Trade name: All Titanium Alloys
Class B Etchant




(Contd. of page 7)

- **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**
- **DOT, IMDG, IATA** UN2922
- **UN proper shipping name**
- **DOT** Corrosive liquids, toxic, n.o.s. (Nitric Acid, Hydrofluoric Acid 49-51% Aqueous Solution)
- **IMDG, IATA** CORROSIVE LIQUID, TOXIC, N.O.S. (Nitric Acid, Hydrofluoric Acid 49-51% Aqueous Solution)
- **Transport hazard class(es)**
- **DOT**
- 
- **Class** 8 Corrosive substances
- **Label** 8, 6.1
- **IMDG**
- 
- **Class** 8 Corrosive substances
- **Label** 8/6.1
- **IATA**
- 
- **Class** 8 Corrosive substances
- **Label** 8 (6.1)

(Contd. on page 9)

US

Safety Data Sheet

acc. to OSHA HCS

Printing date 06/11/2024

Reviewed on 06/11/2024

Trade name: All Titanium Alloys
Class B Etchant

(Contd. of page 8)

· Packing group	II
· DOT, IMDG, IATA	II
· Environmental hazards:	Not applicable.
· Special precautions for user	Warning: Corrosive substances
· Hazard identification number (Kemler code):	86
· EMS Number:	F-A,S-B
· Segregation groups	(SGG1a) Strong acids
· 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
· 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 2922 CORROSIVE LIQUID, TOXIC, N.O.S. (NITRIC ACID, HYDROFLUORIC ACID 49-51% AQUEOUS SOLUTION), 8 (6.1), II

15 Regulatory information

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

· **Section 355 (extremely hazardous substances):**

CAS: 7697-37-2	Nitric Acid
CAS: 7664-39-3	Hydrofluoric Acid 49-51% Aqueous Solution

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

CAS: 7697-37-2	Nitric Acid
CAS: 7664-39-3	Hydrofluoric Acid 49-51% Aqueous Solution

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

Water	ACTIVE
Nitric Acid	ACTIVE
Hydrofluoric Acid 49-51% Aqueous Solution	ACTIVE

· **Hazardous Air Pollutants**

CAS: 7664-39-3	Hydrofluoric Acid 49-51% Aqueous Solution
----------------	---

(Contd. on page 10)

US

Safety Data Sheet

acc. to OSHA HCS

Printing date 06/11/2024

Reviewed on 06/11/2024

Trade name: All Titanium Alloys
Class B Etchant

(Contd. of page 9)

· **Proposition 65**

· **Chemicals known to cause cancer:**

None of the ingredients is listed.

· **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)**

None of the ingredients is listed.

· **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 GHS06

· **Signal word** *Danger*

· **Hazard-determining components of labeling:**

Nitric Acid

Hydrofluoric Acid 49-51% Aqueous Solution

· **Hazard statements**

Toxic if swallowed or if inhaled.

Fatal in contact with skin.

Causes severe skin burns and eye damage.

· **Precautionary statements**

Do not breathe dusts or mists.

Do not get in eyes, on skin, or on clothing.

Wash thoroughly after handling.

Do not eat, drink or smoke when using this product.

Use only outdoors or in a well-ventilated area.

Wear protective gloves/protective clothing/eye protection/face protection.

If swallowed: Immediately call a poison center/doctor.

Specific treatment (see on this label).

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.

Call a poison center/doctor.

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.

Continue rinsing.

Take off immediately all contaminated clothing and wash it before reuse.

(Contd. on page 11)

Safety Data Sheet

acc. to OSHA HCS

Printing date 06/11/2024

Reviewed on 06/11/2024

Trade name: All Titanium Alloys
Class B Etchant

(Contd. of page 10)

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.

· **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:**

Date of Preparation / Last Revision:

· **Date of preparation / last revision**

Revision 1.2, 06/10/2024: Reviewed SDS for accuracy. MH/STN

Revision 0.0, 05-29-2024: Creation date for SDS. STN

06/11/2024 / 1.0

· **Abbreviations and acronyms:**

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

BEI: Biological Exposure Limit

Acute Toxicity - Oral 3: Acute toxicity – Category 3

Acute Toxicity - Dermal 2: Acute toxicity – Category 2

Skin Corrosion 1A: Skin corrosion/irritation – Category 1A

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

· *** Data compared to the previous version altered.**