1 Identification

· Product identifier

· Trade name: 5.0 mg/L 14 Component

Mixed Metal Working Solution

· Article number: SAY004

· 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



GHS08 Health hazard

Specific Target Organ Toxicity - Repeated Exposure 2 H373 May cause damage to organs through prolonged or repeated exposure.



Skin Irritation 2

H315 Causes skin irritation.

H319 Causes serious eye irritation.

Eye Irritation 2A

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





GHS07

GHS08

- · Signal word Warning
- · Hazard-determining components of labeling:

Hydrochloric Acid

· Hazard statements

Causes skin irritation.

Causes serious eye irritation.

May cause damage to organs through prolonged or repeated exposure.

· Precautionary statements

Do not breathe dust/fume/gas/mist/vapors/spray.

(Contd. on page 2)

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Mixed Metal Working Solution

(Contd. of page 1)

Wash thoroughly after handling.

Wear protective gloves / eye protection / face protection.

If on skin: Wash with plenty of water. Specific treatment (see on this label).

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

Get medical advice/attention if you feel unwell.

Take off contaminated clothing and wash it before reuse.

If skin irritation occurs: Get medical advice/attention.

If eye irritation persists: Get medical advice/attention.

Dispose of contents/container in accordance with local/regional/national/international regulations.

- · Classification system:
- · NFPA ratings (scale 0 4)



Health = 2 Fire = 0Reactivity = 0

· 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 compo	onents:	
CAS: 7647-01-0	Hydrochloric Acid	2.343%
· Table of Nonhaza	rdous Ingredients	
CAS: 7732-18-5	Water	96.903%
CAS: 12007-60-2	Lithium Tetraborate, Reagent	0.36%
CAS: 87-69-4	L-Tartaric Acid	0.248%
CAS: 7697-37-2	Nitric Acid	0.076%
CAS: 7789-24-4	Lithium Fluoride	0.04%
CAS: 7784-27-2	Aluminum Nitrate	0.007%
CAS: 13446-18-9	Magnesium Nitrate	0.005%
CAS: 7782-61-8	Ferric Nitrate	0.004%
CAS: 16919-19-0	Ammonium hexafluorosilicate	0.003%
CAS: 7722-76-1	Ammonium Phosphate Monobasic	0.002%
CAS: 19004-19-4	Cupric Nitrate Hydrate	0.002%
CAS: 7631-99-4	Sodium Nitrate	0.002%
CAS: 7757-79-1	Potassium Nitrate	0.001%
		(Contd. on page 3

-US

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Trade name: 5.0 mg/L 14 Component
Mixed Metal Working Solution

		(Contd. of page 2)
CAS: 471-34-1	Calcium Carbonate	0.001%
CAS: 1314-62-1	Vanadium Pentoxide Reagent	0.001%
CAS: 10099-74-8	Lead Nitrate	0.001%
CAS: 7440-02-0	Nickel Metal	0.001%
CAS: 7440-38-2	arsenic	0.0005%
CAS: 7440-66-6	Zinc Metal	0.001%

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. If symptoms persist, consult a doctor.

- · After swallowing: If symptoms persist consult 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.
- Environmental precautions: Dilute with plenty of water.
- · Methods and material for containment and cleaning up:

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

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: 7647-01-0	Hydrochloric Acid	1.8 ppm
		1 4 1 4

(Contd. on page 4)

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Trade name: 5.0 mg/L 14 Component Mixed Metal Working Solution

CAS: 12007-60-2	Lithium Tetraborate, Reagent	(Contd. of page 4.3 mg/m^3
CAS: 87-69-4	L-Tartaric Acid	1.6 mg/m³
CAS: 7697-37-2	Nitric Acid	0.16 ppm
CAS: 7789-24-4	Lithium Fluoride	10 mg/m³
CAS: 7784-27-2	Aluminum Nitrate	83 mg/m³
CAS: 13446-18-9	Magnesium Nitrate	16 mg/m³
CAS: 7782-61-8	Ferric Nitrate	22 mg/m³
CAS: 16919-19-0	Ammonium hexafluorosilicate	12 mg/m³
CAS: 7722-76-1	Ammonium Phosphate Monobasic	17 mg/m³
CAS: 19004-19-4	Cupric Nitrate Hydrate	42 mg/m³
CAS: 7631-99-4	Sodium Nitrate	4.1 mg/m³
CAS: 7757-79-1	Potassium Nitrate	9 mg/m³
CAS: 471-34-1	Calcium Carbonate	45 mg/m ³
CAS: 1314-62-1	Vanadium Pentoxide Reagent	0.64 mg/m
CAS: 10099-74-8	Lead Nitrate	0.24 mg/m
CAS: 7440-02-0	Nickel Metal	4.5 mg/m^3
CAS: 7440-38-2	arsenic	$1.5 mg/m^3$
CAS: 7440-66-6	Zinc Metal	6 mg/m ³
PAC-2:		-
CAS: 7647-01-0	Hydrochloric Acid	22 ppm
CAS: 12007-60-2	Lithium Tetraborate, Reagent	47 mg/m ³
CAS: 87-69-4	L-Tartaric Acid	17 mg/m³
CAS: 7697-37-2	Nitric Acid	24 ppm
CAS: 7789-24-4	Lithium Fluoride	110 mg/m
CAS: 7784-27-2	Aluminum Nitrate	920 mg/m
CAS: 13446-18-9	Magnesium Nitrate	180 mg/m
CAS: 7782-61-8	Ferric Nitrate	110 mg/m
CAS: 16919-19-0	Ammonium hexafluorosilicate	130 mg/m
CAS: 7722-76-1	Ammonium Phosphate Monobasic	190 mg/m
	Cupric Nitrate Hydrate	150 mg/m
CAS: 7631-99-4	Sodium Nitrate	45 mg/m³
CAS: 7757-79-1	Potassium Nitrate	100 mg/m
CAS: 471-34-1	Calcium Carbonate	210 mg/m
CAS: 1314-62-1	Vanadium Pentoxide Reagent	7 mg/m ³
CAS: 10099-74-8	Lead Nitrate	180 mg/m
CAS: 7440-02-0	Nickel Metal	50 mg/m ³
CAS: 7440-38-2	arsenic	17 mg/m³
CAS: 7440-66-6	Zinc Metal	40 mg/m3
PAC-3:		1
	Hydrochloric Acid	100 ppm
	Lithium Tetraborate, Reagent	280 mg/m³
CAS: 87-69-4	L-Tartaric Acid	100 mg/m³

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Trade name: 5.0 mg/L 14 Component
Mixed Metal Working Solution

		(Contd. of page 4)
CAS: 7697-37-2	Nitric Acid	92 ppm
CAS: 7789-24-4	Lithium Fluoride	680 mg/m³
CAS: 7784-27-2	Aluminum Nitrate	5,500 mg/m³
CAS: 13446-18-9	Magnesium Nitrate	$1,100 \text{ mg/m}^3$
CAS: 7782-61-8	Ferric Nitrate	640 mg/m³
CAS: 16919-19-0	Ammonium hexafluorosilicate	780 mg/m³
CAS: 7722-76-1	Ammonium Phosphate Monobasic	1,100 mg/m³
CAS: 19004-19-4	Cupric Nitrate Hydrate	240 mg/m³
CAS: 7631-99-4	Sodium Nitrate	270 mg/m³
CAS: 7757-79-1	Potassium Nitrate	600 mg/m³
CAS: 471-34-1	Calcium Carbonate	$1,300 \text{ mg/m}^3$
CAS: 1314-62-1	Vanadium Pentoxide Reagent	70 mg/m³
CAS: 10099-74-8	Lead Nitrate	$1,100 \text{ mg/m}^3$
CAS: 7440-02-0	Nickel Metal	99 mg/m³
CAS: 7440-38-2	arsenic	100 mg/m³
CAS: 7440-66-6	Zinc Metal	240 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.

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: 7647-01-0 Hydrochloric A	cid
NIOSH RECOMENDED EXP LI	MI Ceiling limit value: 7.0 mg/m³ mg/m³
PEL	Ceiling limit value: 7 mg/m³, 5 ppm
REL	Ceiling limit value: 7 mg/m³, 5 ppm
TLV	Ceiling limit value: 2 ppm
	A4

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

(Contd. on page 6)

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Trade name: 5.0 mg/L 14 Component
Mixed Metal Working Solution

(Contd. of page 5)

- · 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 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

9 Physical and chemical properties

- · Information on basic physical and chemical properties
- · General Information
- · Appearance:

Form: Liquid
Color: Colorless
Odor: Odorless
Odor threshold: Not determined.

· pH-value: Not determined.

· Change in condition

Melting point/Melting range: $0 \, ^{\circ}C \, (32 \, ^{\circ}F)$ Boiling point/Boiling range: $100 \, ^{\circ}C \, (212 \, ^{\circ}F)$

· Flash point: Not applicable.

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Trade name: 5.0 mg/L 14 Component
Mixed Metal Working Solution

	(Contd	. of page
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 $^{\circ}C$ (68 $^{\circ}F$):	23 hPa (17.3 mm Hg)	
Density at 20 °C (68 °F):	1.00481 g/cm³ (8.38514 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/wate	e r): Not determined.	
Viscosity:		
Dynamic:	Not determined.	
Kinematic:	Not determined.	
Solvent content:		
Water:	96.9 %	
VOC content:	0.00 %	
	0.0 g/l / 0.00 lb/gal	
Solids content:	0.7 %	
Other information	No further relevant information available.	

10 Stability and reactivity

- $\cdot \textit{Reactivity No further relevant information available}.$
- · 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.

(Contd. on page 8)

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(Contd. of page 7)

· Additional toxicological information:

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

· Carcinogenic categories

· IARC (Internation	nal Agency for Research on Cancer)	
CAS: 7789-24-4	Lithium Fluoride	3
CAS: 1314-62-1	Vanadium Pentoxide Reagent	2B
CAS: 10099-74-8	Lead Nitrate	2A
CAS: 7440-02-0	Nickel Metal	2B
CAS: 7440-38-2	arsenic	1
· NTP (National To	oxicology Program)	
CAS: 10099-74-8	Lead Nitrate	R
CAS: 7440-02-0	Nickel Metal	R
CAS: 7440-38-2	arsenic	K
· OSHA-Ca (Occup	national Safety & Health Administration)	
CAS: 7440-38-2	arsenic	

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: Not hazardous for water.
- · 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**Not regulated

(Contd. on page 9)

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Trade name: 5.0 mg/L 14 Component Mixed Metal Working Solution

		(Contd. of page 8
· UN proper shipping name · DOT, IMDG, IATA	Not regulated	
· Transport hazard class(es)		
· DOT, ADN, IMDG, IATA · Class	Not regulated	
· Packing group · DOT, IMDG, IATA	Not regulated	
Environmental hazards:	Not applicable.	
· Special precautions for user	Not applicable.	
· Transport in bulk according to Annex MARPOL73/78 and the IBC Code	II of Not applicable.	
· UN "Model Regulation":	Not regulated	

15 Regulatory information

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

Section 355 (extre	mely hazardous substances):	
CAS: 7697-37-2 I	litric Acid	
CAS: 1314-62-1	anadium Pentoxide Reagent	
Section 313 (Spec	ific toxic chemical listings):	
CAS: 7697-37-2	Nitric Acid	
CAS: 7784-27-2	Aluminum Nitrate	
CAS: 13446-18-9	Magnesium Nitrate	
CAS: 7782-61-8	Ferric Nitrate	
CAS: 7757-79-1	Potassium Nitrate	
CAS: 1314-62-1	Vanadium Pentoxide Reagent	
CAS: 10099-74-8	Lead Nitrate	
CAS: 7440-02-0	Nickel Metal	
CAS: 7440-38-2	arsenic	
CAS: 7440-66-6	Zinc Metal	
TSCA (Toxic Sub	tances Control Act):	
Water		ACTIV
Hydrochloric Acid		ACTIV
Lithium Tetrabora	te, Reagent	ACTIV
L-Tartaric Acid		ACTIV
Nitric Acid		ACTIV
Lithium Fluoride		ACTIV
Ammonium hexafl	ıorosilicate	ACTIV
Ammonium Phosp	hate Monobasic	ACTIV

on page 10

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Sodium Nitrate		(Contd. of page ACTIV
Potassium Nitrate		ACTIV
Calcium Carbonate		ACTIV
Vanadium Pentoxi	ide Reagent	ACTIV
Lead Nitrate		ACTIV
Nickel Metal		ACTIV
arsenic		ACTIV
Zinc Metal		ACTIV
· Hazardous Air Po	llutants	
CAS: 7647-01-0	Hydrochloric Acid	
CAS: 10099-74-8	Lead Nitrate	
Proposition 65		
Chemicals known	to cause cancer:	
CAS: 1314-62-1	Vanadium Pentoxide Reagent	
CAS: 10099-74-8	Lead Nitrate	
CAS: 7440-02-0	Nickel Metal	
CAS: 7440-38-2	arsenic	
Chemicals known	to cause reproductive toxicity for females:	
None of the ingrea	lients is listed.	
Chemicals known	to cause reproductive toxicity for males:	
None of the ingrea	lients is listed.	
Chemicals known	to cause developmental toxicity:	
None of the ingrea	<u> </u>	
• •		
Carcinogenic cate	ntal Protection Agency)	
	Lithium Tetraborate, Reagent	I (ora
CAS: 10099-74-8		B2
CAS: 7440-38-2		A
CAS: 7440-66-6		D, I, I
· TLV (Threshold L		D, 1, 1
· I L v (I nresnota L		
		A
CAS: 7789-24-4	Van a dium Dantani da Daga ant	
CAS: 7789-24-4 CAS: 1314-62-1	Vanadium Pentoxide Reagent	
CAS: 7789-24-4 CAS: 1314-62-1 CAS: 10099-74-8	Lead Nitrate	A
CAS: 7789-24-4 CAS: 1314-62-1 CAS: 10099-74-8 CAS: 7440-02-0	Lead Nitrate Nickel Metal	A A
CAS: 7789-24-4 CAS: 1314-62-1 CAS: 10099-74-8 CAS: 7440-02-0 CAS: 7440-38-2	Lead Nitrate Nickel Metal arsenic	A A
CAS: 7789-24-4 CAS: 1314-62-1 CAS: 10099-74-8 CAS: 7440-02-0 CAS: 7440-38-2	Lead Nitrate Nickel Metal arsenic nal Institute for Occupational Safety and Health)	A A A A

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(Contd. of page 10)

· Hazard pictograms





GHS07

- · Signal word Warning
- · Hazard-determining components of labeling:

Hydrochloric Acid

· Hazard statements

Causes skin irritation.

Causes serious eye irritation.

May cause damage to organs through prolonged or repeated exposure.

· Precautionary statements

Do not breathe dust/fume/gas/mist/vapors/spray.

Wash thoroughly after handling.

Wear protective gloves / eye protection / face protection.

If on skin: Wash with plenty of water.

Specific treatment (see on this label).

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

Continue rinsing.

Get medical advice/attention if you feel unwell.

Take off contaminated clothing and wash it before reuse.

If skin irritation occurs: Get medical advice/attention.

If eye irritation persists: Get medical advice/attention.

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 07/24/2024: Reviewed SDS for accuracy. MH/STN

07/24/2024 / 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)

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

(Contd. on page 12)

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Trade name: 5.0 mg/L 14 Component Mixed Metal Working Solution

(Contd. of page 11)

REL: Recommended Exposure Limit

Skin Irritation 2: Skin corrosion/irritation – Category 2

Eye Irritation 2A: Serious eye damage/eye irritation – Category 2A

Specific Target Organ Toxicity - Repeated Exposure 2: Specific target organ toxicity (repeated exposure) – Category 2

· * Data compared to the previous version altered.