Printing date 06/26/2024 Reviewed on 06/26/2024

1 Identification

· Product identifier

· Trade name: 1.0 mg/L 14 Component

Mixed Metal Working Solution

· Article number: SAY001

· 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 AQUA SOLUTIONS

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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 Corrosion 1A

H314 Causes severe skin burns and eye damage.

H318 Causes serious eye damage.

Eye Damage 1

- · 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:

Hydrochloric Acid

· Hazard statements

Causes severe skin burns and eye damage.

May cause damage to organs through prolonged or repeated exposure.

· Precautionary statements

Do not breathe dusts or mists.

Wash thoroughly after handling.

(Contd. on page 2)

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Trade name: 1.0 mg/L 14 Component
Mixed Metal Working Solution

(Contd. of page 1)

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).

Get medical advice/attention if you feel unwell.

Wash contaminated clothing before reuse.

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 = 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 components:	
CAS: 7647-01-0 Hydrochloric Acid	2.001%
· Table of Nonhazardous Ingredients	
CAS: 7732-18-5 Water	97.579%
CAS: 12007-60-2 Lithium Tetraborate, Reagent	0.359%
CAS: 7789-24-4 Lithium Fluoride	0.04%
CAS: 7697-37-2 Nitric Acid	0.015%
CAS: 7784-27-2 Aluminum Nitrate	0.001%
CAS: 13446-18-9 Magnesium Nitrate	0.001%
CAS: 7782-61-8 Ferric Nitrate	0.001%
CAS: 16919-19-0 Ammonium hexafluorosilicate	0.001%
CAS: 7722-76-1 Ammonium Phosphate Monobasic	0.0004%
CAS: 7631-99-4 Sodium Nitrate	0.0004%
CAS: 19004-19-4 Cupric Nitrate Hydrate	0.0004%
CAS: 7757-79-1 Potassium Nitrate	0.0003%
·	(Contd. on page 3)

(Contd. on page 3

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Trade name: 1.0 mg/L 14 Component
Mixed Metal Working Solution

		(Contd. of page 2)
CAS: 471-34-1	Calcium Carbonate	0.0002%
CAS: 1314-62-1	Vanadium Pentoxide Reagent	0.0002%
CAS: 10099-74-8	Lead Nitrate	0.0002%
CAS: 87-69-4	L-Tartaric Acid	0.0001%
CAS: 7440-02-0	Nickel Metal	0.0001%
CAS: 7440-66-6	Zinc Metal	0.0001%

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: 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).

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.

(Contd. on page 4)

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Trade name: 1.0 mg/L 14 Component
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Protective Action	Criteria for Chemicals	(Contd. of page
PAC-1:	one mayor Chemicals	
CAS: 7647-01-0	Hydrochloric Acid	1.8 ppm
CAS: 12007-60-2	Lithium Tetraborate, Reagent	4.3 mg/m ³
CAS: 7789-24-4	Lithium Fluoride	10 mg/m³
CAS: 7697-37-2	Nitric Acid	0.16 ppm
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: 7631-99-4	Sodium Nitrate	4.1 mg/m ²
CAS: 19004-19-4	Cupric Nitrate Hydrate	42 mg/m³
CAS: 7757-79-1	Potassium Nitrate	9 mg/m³
CAS: 471-34-1	Calcium Carbonate	45 mg/m³
CAS: 1314-62-1	Vanadium Pentoxide Reagent	0.64 mg/n
CAS: 10099-74-8	Lead Nitrate	0.24 mg/n
CAS: 87-69-4	L-Tartaric Acid	1.6 mg/m ⁻
CAS: 7440-02-0	Nickel Metal	4.5 mg/m ²
CAS: 7440-38-2	arsenic	1.5 mg/m ²
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 ²
CAS: 7789-24-4	Lithium Fluoride	110 mg/n
CAS: 7697-37-2	Nitric Acid	24 ppm
CAS: 7784-27-2	Aluminum Nitrate	920 mg/n
CAS: 13446-18-9	Magnesium Nitrate	180 mg/n
CAS: 7782-61-8	Ferric Nitrate	110 mg/n
CAS: 16919-19-0	Ammonium hexafluorosilicate	130 mg/n
CAS: 7722-76-1	Ammonium Phosphate Monobasic	190 mg/n
CAS: 7631-99-4	Sodium Nitrate	45 mg/m ²
CAS: 19004-19-4	Cupric Nitrate Hydrate	150 mg/n
CAS: 7757-79-1	Potassium Nitrate	100 mg/n
CAS: 471-34-1	Calcium Carbonate	210 mg/n
CAS: 1314-62-1	Vanadium Pentoxide Reagent	7 mg/m³
CAS: 10099-74-8	Ü	180 mg/n
CAS: 87-69-4	L-Tartaric Acid	17 mg/m ²
CAS: 7440-02-0	Nickel Metal	50 mg/m ²
CAS: 7440-38-2	arsenic	17 mg/m ²
CAS: 7440-66-6	Zinc Metal	40 mg/m ²

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	(Contd. of page
<i>PAC-3:</i>	
CAS: 7647-01-0 Hydrochloric Acid	100 ppm
CAS: 12007-60-2 Lithium Tetraborate, Reagent	280 mg/m^3
CAS: 7789-24-4 Lithium Fluoride	680 mg/m^3
CAS: 7697-37-2 Nitric Acid	92 ppm
CAS: 7784-27-2 Aluminum Nitrate	5,500 mg/m ²
CAS: 13446-18-9 Magnesium Nitrate	1,100 mg/m
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/m ²
CAS: 7631-99-4 Sodium Nitrate	270 mg/m³
CAS: 19004-19-4 Cupric Nitrate Hydrate	240 mg/m^3
CAS: 7757-79-1 Potassium Nitrate	600 mg/m^3
CAS: 471-34-1 Calcium Carbonate	1,300 mg/m ²
CAS: 1314-62-1 Vanadium Pentoxide Reagent	70 mg/m³
CAS: 10099-74-8 Lead Nitrate	1,100 mg/m
CAS: 87-69-4 L-Tartaric Acid	100 mg/m³
CAS: 7440-02-0 Nickel Metal	99 mg/m³
CAS: 7440-38-2 arsenic	100 mg/m^3
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 Acid			
NIOSH RECOMENDED EXP LIMI	Ceiling limit value: 7.0 mg/m3 mg/m³		
PEL	Ceiling limit value: 7 mg/m³, 5 ppm		

(Contd. on page 6)

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Mixed Metal Working Solution

(Contd. of page 5)

RELCeiling limit value: 7 mg/m³, 5 ppm TLVCeiling limit value: 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.

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

9 Physical and chemical properties

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

Form: Liquid

Color: Clear to pale green

· Odor: **Odorless**

· Odor threshold: Not determined.

(Contd. on page 7)

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Trade name: 1.0 mg/L 14 Component
Mixed Metal Working Solution

	(Contd. of p.
· pH-value at 20 °C (68 °F):	<2
· Change in condition	
Melting point/Melting range:	0 °C (32 °F)
Boiling point/Boiling range:	100 °C (212 °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):	1.00376 g/cm³ (8.37638 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:	97.6 %
VOC content:	0.00 %
	0.0 g/l / 0.00 lb/gal
Solids content:	0.6 %
· 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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Trade name: 1.0 mg/L 14 Component
Mixed Metal Working Solution

(Contd. of page 7)

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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 (Internatio	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 T	oxicology Program)	
CAS: 10099-74-8	Lead Nitrate	R
CAS: 7440-02-0	Nickel Metal	R
CAS: 7440-38-2	arsenic	K
· OSHA-Ca (Occu	pational 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.

Must not reach bodies of water or drainage ditch undiluted or unneutralized.

Rinse off of bigger amounts into drains or the aquatic environment may lead to decreased pH-values. A low pH-value harms aquatic organisms. In the dilution of the use-level the pH-value is considerably increased, so that after the use of the product the aqueous waste, emptied into drains, is only low water-dangerous.

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

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Trade name: 1.0 mg/L 14 Component
Mixed Metal Working Solution

· Other adverse effects No further relevant information available.

(Contd. of page 8)

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.

UN-Number		
DOT, IMDG, IATA	Not regulated	
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	II of	
MARPOL73/78 and the IBC Code	Not applicable.	

15 Regulatory information

· UN "Model Regulation":

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

Not regulated

· Sara

· Section 355 (extr	emely hazardous substances):
CAS: 7697-37-2	Nitric Acid
CAS: 1314-62-1	Vanadium Pentoxide Reagent
· Section 313 (Spec	cific 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
	(Contd. on page 10)

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Trade name: 1.0 mg/L 14 Component
Mixed Metal Working Solution

CAG 1214 (2.1	W. P. C. I. D.	(Contd. of page
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	
*	ostances Control Act):	
Water		ACTIV
Hydrochloric Acid		ACTIV
Lithium Tetrabora	ate, Reagent	ACTIV
Lithium Fluoride		ACTIV
Nitric Acid		ACTIV
Ammonium hexafl		ACTIV
Ammonium Phosp	phate Monobasic	ACTIV
Sodium Nitrate		ACTIV
Potassium Nitrate		ACTIV
Calcium Carbona	ite	ACTIV
Vanadium Pentox	ide Reagent	ACTIV
Lead Nitrate		ACTIV
L-Tartaric Acid		ACTIV
Nickel Metal		ACTIV
arsenic		ACTIV
Zinc Metal		ACTIV
Hazardous Air Pa	ollutants	
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 ingred	- · · · · · · · · · · · · · · · · · · ·	
Chemicals known	to cause reproductive toxicity for males:	
None of the ingred	*	
	to cause developmental toxicity:	
	dients is listed.	
	egories	
Carcinogenic cate	<u> </u>	
Carcinogenic cate	ntal Protection Agency)	To .
Carcinogenic cate EPA (Environment CAS: 12007-60-2	ntal Protection Agency) Lithium Tetraborate, Reagent	I (oral
Carcinogenic cate	ntal Protection Agency) Lithium Tetraborate, Reagent	I (orac B2 A

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		(Contd. of page 10)	
CAS: 7440-66-6	Zinc Metal	D, I, II	
· TLV (Threshold	Limit Value)		
CAS: 7789-24-4	Lithium Fluoride	A4	
CAS: 1314-62-1	Vanadium Pentoxide Reagent	A3	
CAS: 10099-74-8	Lead Nitrate	A3	
CAS: 7440-02-0	Nickel Metal	A5	
CAS: 7440-38-2	arsenic	A1	
· NIOSH-Ca (National Institute for Occupational Safety and Health)			
CAS: 7440-02-0	Nickel Metal		
CAS: 7440-38-2	arsenic		

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





GHS05 GHS08

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

Hydrochloric Acid

· Hazard statements

Causes severe skin burns and eye damage.

May cause damage to organs through prolonged or repeated exposure.

· Precautionary statements

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).

Get medical advice/attention if you feel unwell.

Wash contaminated clothing before reuse.

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:

(Contd. on page 12)

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Trade name: 1.0 mg/L 14 Component
Mixed Metal Working Solution

(Contd. of page 11)

· Date of preparation / last revision

Revision 0.1, 06/26/2024: Reviewed SDS for accuracy. MH/STN

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

06/26/2024 / 1.1

· 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 REL: Recommended Exposure Limit

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

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

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

* Data compared to the previous version altered.

LIS