Printing date 07/25/2024 Reviewed on 07/25/2024

1 Identification

· Product identifier

· Trade name: Chromic Acid

5% w/v Aqueous Solution

· Article number: ANA054

· Details of the supplier of the safety data sheet

· Manufacturer/Supplier: Aqua Solutions, Inc. 6913 Highway 225 DEER PARK, TX 77536 USA800-256-2586

· Information department: Technical Coordinator

Sherman Nelson shermann@aquasolutions.org

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



GHS03 Flame over circle

Oxidizing Liquids 1 H271 May cause fire or explosion; strong oxidizer.



GHS06 Skull and crossbones

Acute Toxicity - Inhalation 2 H330 Fatal if inhaled.



GHS08 Health hazard

H334 May cause allergy or asthma symptoms or Sensitization - Respiratory 1

breathing difficulties if inhaled.

Germ Cell Mutagenicity 1B H340 May cause genetic defects.

Carcinogenicity 1A H350 May cause cancer.

Toxic to Reproduction 2 H361 Suspected of damaging fertility or the unborn child.

Specific Target Organ Toxicity - Repeated Exposure 1 H372 Causes damage to the respiratory system through

prolonged or repeated exposure.



Skin Corrosion 1A H314 Causes severe skin burns and eye damage.

Eye Damage 1 H318 Causes serious eye damage.

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5% w/v Aqueous Solution

(Contd. of page 1)



Acute Toxicity - Oral 4

H302 Harmful if swallowed.

H317 May cause an allergic skin reaction.

Sensitization - Skin 1

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









GHS03

GHS05

GHS06 GHS08

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

Chromium (VI) Oxide 99.9%

· Hazard statements

May cause fire or explosion; strong oxidizer.

Harmful if swallowed.

Fatal if inhaled.

Causes severe skin burns and eye damage.

May cause allergy or asthma symptoms or breathing difficulties if inhaled.

May cause an allergic skin reaction.

May cause genetic defects.

May cause cancer.

Suspected of damaging fertility or the unborn child.

Causes damage to the respiratory system through prolonged or repeated exposure.

· Precautionary statements

Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

Keep/Store away from clothing and other combustible materials

Take any precaution to avoid mixing with combustibles.

Do not breathe dusts or mists.

Wash thoroughly after handling.

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

Use only outdoors or in a well-ventilated area.

Contaminated work clothing must not be allowed out of the workplace.

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

Wear fire/flame resistant/retardant clothing.

[In case of inadequate ventilation] wear respiratory protection.

If swallowed: Call a poison center/doctor if you feel unwell.

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.

If on clothing: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes.

IF exposed or concerned: Get medical advice/attention.

Specific treatment is urgent (see on this label).

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(Contd. of page 2)

Get medical advice/attention if you feel unwell.

If skin irritation or rash occurs: Get medical advice/attention.

If experiencing respiratory symptoms: Call a poison center/doctor.

Wash contaminated clothing before reuse.

In case of fire: Use CO2, powder or water spray to extinguish.

In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.

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 = 3Reactivity = 0

The substance possesses oxidizing properties.

· HMIS-ratings (scale 0 - 4)

HEALTH *3
FIRE 3

*3 *Health* = *3

3 *Fire* = 3

REACTIVITY 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: 1333-82-0 Chromium (VI) Oxide 99.9%

5.0%

· Table of Nonhazardous Ingredients

CAS: 7732-18-5 Water

95.0%

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.

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.

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(Contd. of page 3)

- · After eye contact: Rinse opened eye for several minutes under running water. Then consult a doctor.
- · After swallowing:

Immediately call a doctor.

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 product to reach sewage system or any water course.

Inform respective authorities in case of seepage into water course or sewage system.

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

· Froiective Action Criteria for Chemicals	
· PAC-1:	
CAS: 1333-82-0 Chromium (VI) Oxide 99.9%	$0.29 \ mg/m^3$
· PAC-2:	
CAS: 1333-82-0 Chromium (VI) Oxide 99.9%	0.10 mg/m3
· PAC-3:	
CAS: 1333-82-0 Chromium (VI) Oxide 99.9%	30 mg/m^3

7 Handling and storage

- · Handling:
- · Precautions for safe handling

Ensure good ventilation/exhaustion at the workplace.

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(Contd. of page 4)

Open and handle receptacle with care.

Only handle and refill product in closed systems.

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: 1333-82-0 Chromium (VI) Oxide 99.9%

PEL Long-term value: 0.005* mg/m³

Ceiling limit value: 0.1** mg/m³

*as Cr(VI) **as CrO3; see 29 CFR 1910.1026

REL Long-term value: 0.0002 mg/m³

as Cr; See Pocket Guide Apps. A and C

TLV Short-term value: 0.0005 mg/m³

Long-term value: 0.0002 mg/m³

as Cr(VI); A1; inhalable, Skin; BEI, DSEN, RSEN

· Ingredients with biological limit values:

CAS: 1333-82-0 Chromium (VI) Oxide 99.9%

BEI 25 μg/L

LD50 Intraperitoneal: urine

Time: end of shift at end of workweek

LD50: Total chromium (fume)

10 μg/L

LD50 Intraperitoneal: urine

Time: increase during shift

LD50: Total chromium (fume)

- · 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.

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(Contd. of page 5)

· 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: Safety glasses



Tightly sealed goggles

· Body protection: Protective work clothing

Information on basic physical and General Information	chemical properties	
Appearance:		
Form:	Liquid	
Color:	Red	
Odor:	Odorless	
Odor threshold:	Not determined.	
pH-value at 20 °C (68 °F):	<2	
Change in condition		
Melting point/Melting range:	0 °C (32 °F)	
Boiling point/Boiling range:	0 °C (32 °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. Explosive when mixed with combustible material.	
Explosion limits:		
Lower:	Not determined.	
Upper:	Not determined.	

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		(Contd. of page	
Vapor pressure at 20 °C (68 °F):	23 hPa (17.3 mm Hg)		
Density at 20 °C (68 °F):	1.09 g/cm³ (9.09605 lbs/gal)		
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/wate	er): Not determined.		
Viscosity:			
Dynamic:	Not determined.		
Kinematic:	Not determined.		
Solvent content:			
Water:	95.0 %		
VOC content:	0.00 %		
	0.0 g/l / 0.00 lb/gal		
Solids content:	5.0 %		
Other information	No further relevant information available.		

10 Stability and reactivity

- · Reactivity No further relevant information available.
- · Chemical stability
- Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
- · Possibility of hazardous reactions No dangerous reactions known.
- · Conditions to avoid No further relevant information available.
- · Incompatible materials: No further relevant information available.
- · Hazardous decomposition products: No dangerous decomposition products known.

11 Toxicological information

- · Information on toxicological effects
- · Acute toxicity:

· LD/LC50 values that are relevant for classification:			
ATE (Acute Toxicity Estimate)			
Oral	LD50	2,000 mg/kg	
Dermal	<i>LD50</i>	6,000 mg/kg	
Inhalative	LC50/4h	1 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:

Sensitization possible through inhalation.

Sensitization possible through skin contact.

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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: Toxic

Harmful

Corrosive

Irritant

Very toxic

Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

The product can cause inheritable damage.

· Carcinogenic categories

CAS: 1333-82-0 Chromium (VI) Oxide 99.9%

· NTP (National Toxicology Program)

CAS: 1333-82-0 Chromium (VI) Oxide 99.9%

K

· 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 3 (Self-assessment): extremely hazardous for water

Do not allow product to reach ground water, water course or sewage system, even in small quantities.

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

Danger to drinking water if even extremely small quantities leak into the ground.

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.
- · 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.

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Trade name: Chromic Acid

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(Contd. of page 8)

· Uncleaned packagings:

· Recommendation: Disposal must be made according to official regulations.

Transport information	
· UN-Number · DOT, IMDG, IATA	UN2922
· UN proper shipping name · DOT · IMDG, IATA	Corrosive liquids, toxic, n.o.s. (chromium (VI) trioxide) CORROSIVE LIQUID, TOXIC, N.O.S. (chromium (VI) trioxide)
· Transport hazard class(es)	
· DOT	
CORROSIVE TOXIC	
· Class · Label	8 Corrosive substances 8, 6.1
· IMDG	
· Class	8 Corrosive substances
· Label	8/6.1
· IATA · Class · Label	8 Corrosive substances 8 (6.1)
· Packing group	
· DOT, IMDG, IATA	II
· Environmental hazards:	Product contains environmentally hazardous substance chromium (VI) trioxide
· Marine pollutant:	No Symbol (fish and tree)
· Special precautions for user · Hazard identification number (Kemler code). · EMS Number: · Stowage Category	Warning: Corrosive substances : 86 F-A,S-B B
· Stowage Category · Stowage Code	SW2 Clear of living quarters.

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	(Contd. of page 9
· Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
· Transport/Additional information:	
$\cdot DOT$	
· Quantity limitations	On passenger aircraft/rail: 5 L
-	On cargo aircraft only: 60 L
· IMDG	
· Limited quantities (LQ)	5L
\cdot Excepted quantities (\widetilde{EQ})	Code: E1
• • • • • •	Maximum net quantity per inner packaging: 30 ml
	Maximum net quantity per outer packaging: 1000 ml
· UN "Model Regulation":	UN 2922 CORROSIVE LIQUID, TOXIC, N.O.S. (CHROMIUN (VI) TRIOXIDE), 8 (6.1), II

15 Regulatory information

- · Safety, health and environmental regulations/legislation specific for the substance or mixture
- · Sara

. Section	355	(oxtromolv	hazardous	substances):

None of the ingredients is listed.

· Section 313 (Specific toxic chemical listings):

CAS: 1333-82-0 Chromium (VI) Oxide 99.9%

· TSCA (Toxic Substances Control Act):

Water ACTIVE
Chromium (VI) Oxide 99.9% ACTIVE

· Hazardous Air Pollutants

CAS: 1333-82-0 Chromium (VI) Oxide 99.9%

- · Proposition 65
- · Chemicals known to cause cancer:

CAS: 1333-82-0 Chromium (VI) Oxide 99.9%

· Chemicals known to cause reproductive toxicity for females:

CAS: 1333-82-0 Chromium (VI) Oxide 99.9%

· Chemicals known to cause reproductive toxicity for males:

CAS: 1333-82-0 Chromium (VI) Oxide 99.9%

· Chemicals known to cause developmental toxicity:

CAS: 1333-82-0 | Chromium (VI) Oxide 99.9%

· Carcinogenic categories

· EPA (Environmental Protection Agency)

CAS: 1333-82-0 Chromium (VI) Oxide 99.9%

A(inh), D(oral), K/L(inh), CBD(oral)

· TLV (Threshold Limit Value)

CAS: 1333-82-0 | Chromium (VI) Oxide 99.9%

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A1

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

CAS: 1333-82-0 Chromium (VI) Oxide 99.9%

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









GHS03

03 GHS05

GHS06

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· Signal word Danger

· Hazard-determining components of labeling:

Chromium (VI) Oxide 99.9%

· Hazard statements

May cause fire or explosion; strong oxidizer.

Harmful if swallowed.

Fatal if inhaled.

Causes severe skin burns and eye damage.

May cause allergy or asthma symptoms or breathing difficulties if inhaled.

May cause an allergic skin reaction.

May cause genetic defects.

May cause cancer.

Suspected of damaging fertility or the unborn child.

Causes damage to the respiratory system through prolonged or repeated exposure.

· Precautionary statements

Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

Keep/Store away from clothing and other combustible materials

Take any precaution to avoid mixing with combustibles.

Do not breathe dusts or mists.

Wash thoroughly after handling.

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

Use only outdoors or in a well-ventilated area.

Contaminated work clothing must not be allowed out of the workplace.

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

Wear fire/flame resistant/retardant clothing.

[In case of inadequate ventilation] wear respiratory protection.

If swallowed: Call a poison center/doctor if you feel unwell.

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.

If on clothing: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes.

IF exposed or concerned: Get medical advice/attention.

Specific treatment is urgent (see on this label).

Get medical advice/attention if you feel unwell.

If skin irritation or rash occurs: Get medical advice/attention.

If experiencing respiratory symptoms: Call a poison center/doctor.

Wash contaminated clothing before reuse.

In case of fire: Use CO2, powder or water spray to extinguish.

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Trade name: Chromic Acid

5% w/v Aqueous Solution

(Contd. of page 11)

In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.

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.

- · National regulations:
- · Additional classification according to Decree on Hazardous Materials:

Carcinogenic hazardous material group III (dangerous).

· Information about limitation of use:

Workers are not allowed to be exposed to the hazardous carcinogenic materials contained in this preparation. Exceptions can be made by the authorities in certain cases.

· 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 07/25/2024: Reviewed SDS for accuracy. MH/STN 07/25/2024 / 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)

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

Oxidizing Liquids 1: Oxidizing liquids - Category 1

Acute Toxicity - Oral 4: Acute toxicity - Category 4

Acute Toxicity - Inhalation 2: Acute toxicity - Category 2 Skin Corrosion 1A: Skin corrosion/irritation - Category 1A

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

Sensitization - Respiratory 1: Respiratory sensitisation - Category 1

Sensitization - Skin 1: Skin sensitisation - Category 1

Germ Cell Mutagenicity 1B: Germ cell mutagenicity - Category 1B

Carcinogenicity 1A: Carcinogenicity - Category 1A

Toxic to Reproduction 2: Reproductive toxicity – Category 2

Specific Target Organ Toxicity - Repeated Exposure 1: Specific target organ toxicity (repeated exposure) - Category 1

* Data compared to the previous version altered.