Printing date 05/31/2024 Reviewed on 05/31/2024

1 Identification

· Product identifier

· Trade name: Digestion Solution For

Determintion of COD (Low Level)

· Article number: LUM019

· 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 - Inhalation 2 H330 Fatal if inhaled.



GHS08 Health hazard

Carcinogenicity 1A H350 May cause cancer.

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



GHS05 Corrosion

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

Eye Damage 1 H318 Causes serious eye damage.



GHS07

Specific Target Organ Toxicity - Single Exposure 3 H335 May cause respiratory irritation.

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

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· Hazard pictograms



· Signal word Danger

· Hazard-determining components of labeling:

Sulfuric Acid 96 - 98%

Mercuric Sulfate

· Hazard statements

Fatal if inhaled.

Causes severe skin burns and eye damage.

May cause cancer.

May cause respiratory irritation.

May cause damage to organs through prolonged or repeated exposure.

· Precautionary statements

Obtain special instructions before use.

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

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.

[In case of inadequate ventilation] wear respiratory 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.

IF exposed or concerned: Get medical advice/attention.

Specific treatment is urgent (see on this label).

Get medical advice/attention if you feel unwell.

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)



· HMIS-ratings (scale 0 - 4)



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

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(Contd. of page 2)

· vPvB: Not applicable.

3 Composition/information on ingredients

- · Chemical characterization: Mixtures
- · **Description**: Mixture of the substances listed below with nonhazardous additions.

· Dangerous components:	
CAS: 7664-93-9 Sulfuric Acid 96 - 98%	26.284%
CAS: 7783-35-9 Mercuric Sulfate	2.848%
· Table of Nonhazardous Ingredients	
CAS: 7732-18-5 Water	70.78%
CAS: 7778-50-9 Potassium Dichromate	0.087%

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.

- $\cdot \textit{After skin contact:} \ \textit{Immediately wash with water and soap and rinse thoroughly}.$
- · 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.

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· 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

1 Totective Metton	Crueria for Chemicais	
· PAC-1:		
CAS: 7664-93-9	Sulfuric Acid 96 - 98%	$0.20 \ mg/m^3$
CAS: 7783-35-9	Mercuric Sulfate	$0.11 mg/m^3$
CAS: 7778-50-9	Potassium Dichromate	$0.42 \ mg/m^3$
· PAC-2:		
CAS: 7664-93-9	Sulfuric Acid 96 - 98%	$8.7 mg/m^3$
CAS: 7783-35-9	Mercuric Sulfate	0.15 mg/m^3
CAS: 7778-50-9	Potassium Dichromate	7.4 mg/m ³
· PAC-3:		
CAS: 7664-93-9	Sulfuric Acid 96 - 98%	160 mg/m^3
CAS: 7783-35-9	Mercuric Sulfate	41 mg/m³
CAS: 7778-50-9	Potassium Dichromate	44 mg/m³

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.

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· Control parameters

CAS: 7664-93-9 Sulfuric Acid 96 - 98% PEL Long-term value: 1 mg/m³ REL Long-term value: 0.2* mg/m³ *as thoracic fraction, A2 CAS: 7783-35-9 Mercuric Sulfate PEL Long-term value: 0.1 mg/m³ as Hg; see OSHA standard interpretation memo REL Long-term value: 0.05* mg/m³ Ceiling limit value: 0.1 mg/m³ as Hg; *Vapor; Skin TLV Long-term value: 0.025 mg/m³

· Ingredients with biological limit values:

CAS: 7783-35-9 Mercuric Sulfate

as Hg; A4; Skin; BEI

BEI 20 µg/g creatinine

LD50 Intraperitoneal: urine

Time: prior to shift LD50: Mercury

- · 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.

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· 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

Physical and chemical propert	ics
Information on basic physical and c	hemical properties
General Information	
Appearance:	71
Form: Color:	Liquid
Cowr: Odor:	Orange Odorless
Odor threshold:	Not determined.
pH-value:	Not determined.
Change in condition	
Melting point/Melting range:	Undetermined.
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):	1.37806 g/cm³ (11.49991 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	r): Not determined.
Viscosity:	
Dynamic:	Not determined.

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	(Contd. of p	age 6)
· Solvent content:	70.0.07	
Water: VOC content:	70.8 % 0.00 %	
	0.0 g/l / 0.00 lb/gal	
Solids content:	2.9 %	
· 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	· LD/LC50 values that are relevant for classification:		
ATE (Acua	ATE (Acute Toxicity Estimate)		
Oral		2,001 mg/kg (rat)	
Dermal	LD50	21,942 mg/kg (rat)	
Inhalative	LC50/4h	1.76 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

Very toxic

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

· Carcinogenic categories

CAS: 7664-93-9 Sulfuric Acid 96 - 98% CAS: 7783-35-9 Mercuric Sulfate CAS: 7778-50-0 Retroction Disharmets	· IARC (Internatio	nal Agency for Research on Cancer)	
· ·	CAS: 7664-93-9	Sulfuric Acid 96 - 98%	1
CAS. 7779 50 0 Paranism Distriction	CAS: 7783-35-9	Mercuric Sulfate	3
CAS: ///8-30-9 Potassium Dichromate	CAS: 7778-50-9	Potassium Dichromate	1

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K
K

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 2 (Self-assessment): hazardous for water

Do not allow product to reach ground water, water course or sewage system.

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

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

- · 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.

4 Transport information	
· UN-Number · DOT, IMDG, IATA	UN2922
· UN proper shipping name · DOT · IMDG, IATA	Corrosive liquids, toxic, n.o.s. (Sulfuric Acid, Mercuric Sulfate) CORROSIVE LIQUID, TOXIC, N.O.S. (Sulfuric Acid, Mercuric Sulfate)
	(Contd. on maga

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(Contd. of page 8) · Transport hazard class(es) $\cdot DOT$ · Class 8 Corrosive substances · Label 8. 6.1 · IMDG · Class 8 Corrosive substances · Label 8/6.1 \cdot IATA · Class 8 Corrosive substances · Label 8 (6.1) · Packing group · DOT, IMDG, IATA II· Environmental hazards: Product contains environmentally hazardous substances: Mercuric Sulfate · Marine pollutant: Symbol (fish and tree) · Special precautions for user Warning: Corrosive substances · Hazard identification number (Kemler code): 86 · EMS Number: F-A,S-B· Segregation groups (SGG1a) Strong acids, (SGG7) heavy metals and their salts (including their organometallic compounds), (SGG11) mercury and mercury compounds · Stowage Category · 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: On passenger aircraft/rail: 1 L · Quantity limitations On cargo aircraft only: 30 L · IMDG 1L· Limited quantities (LQ) (Contd. on page 10)

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	(Contd. of page 9
· 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. (SULFURIO ACID, MERCURIC SULFATE), 8 (6.1), II

Safety health and anying was at 1 and 1 diameter 1	ion amonific for the authoraneinter-
· Safety, health and environmental regulations/legislati · Sara	on specific for the substance or mixture
· Section 355 (extremely hazardous substances):	
CAS: 7664-93-9 Sulfuric Acid 96 - 98%	
CAS: 7783-35-9 Mercuric Sulfate	
· Section 313 (Specific toxic chemical listings):	
CAS: 7664-93-9 Sulfuric Acid 96 - 98%	
CAS: 7783-35-9 Mercuric Sulfate	
CAS: 7778-50-9 Potassium Dichromate	
· TSCA (Toxic Substances Control Act):	
Water	ACTIV
Sulfuric Acid 96 - 98%	ACTIV
Mercuric Sulfate	ACTIV
Potassium Dichromate	ACTIV
· Hazardous Air Pollutants	
CAS: 7778-50-9 Potassium Dichromate	
Proposition 65	
· Chemicals known to cause cancer:	
CAS: 7778-50-9 Potassium Dichromate	
· Chemicals known to cause reproductive toxicity for fe	males:
CAS: 7778-50-9 Potassium Dichromate	
· Chemicals known to cause reproductive toxicity for m	ales:
CAS: 7778-50-9 Potassium Dichromate	
Chemicals known to cause developmental toxicity:	
CAS: 7783-35-9 Mercuric Sulfate	
CAS: 7778-50-9 Potassium Dichromate	
· Carcinogenic categories	
· EPA (Environmental Protection Agency)	
CAS: 7783-35-9 Mercuric Sulfate	D
CAS: 7778-50-9 Potassium Dichromate	A(inh), D(oral), K/L(inh), CBD(ora
· TLV (Threshold Limit Value)	
CAS: 7664-93-9 Sulfuric Acid 96 - 98%	A
CAS: 7783-35-9 Mercuric Sulfate	A

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

CAS: 7778-50-9 Potassium Dichromate

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









GHS05

GHS06

GHS07

· Signal word Danger

· Hazard-determining components of labeling:

Sulfuric Acid 96 - 98%

Mercuric Sulfate

· Hazard statements

Fatal if inhaled.

Causes severe skin burns and eye damage.

May cause cancer.

May cause respiratory irritation.

May cause damage to organs through prolonged or repeated exposure.

· Precautionary statements

Obtain special instructions before use.

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

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.

[In case of inadequate ventilation] wear respiratory 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.

IF exposed or concerned: Get medical advice/attention.

Specific treatment is urgent (see on this label).

Get medical advice/attention if you feel unwell.

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.

· National regulations:

· 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.

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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 0.0 05-31-2024: Creation date for SDS. CMC/STN 05/31/2024

· 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 - Inhalation 2: Acute toxicity - Category 2

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

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

Carcinogenicity 1A: Carcinogenicity - Category 1A

Specific Target Organ Toxicity - Single Exposure 3: Specific target organ toxicity (single exposure) - Category 3

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

US