Printing date 11/13/2023 Reviewed on 11/13/2023

1 Identification

· Product identifier

· Trade name: HBBLI Level 4 Standard

· Article number: ARL032

· 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



GHS02 Flame

Flammable Liquids 2

H225 Highly flammable liquid and vapor.



GHS08 Health hazard

Carcinogenicity 1B 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 hearing organs through

prolonged or repeated exposure.

Aspiration Hazard 1 H304 May be fatal if swallowed and enters airways.



Skin Irritation 2 H315 Causes skin irritation.

Eye Irritation 2A H319 Causes serious eye irritation.

Specific Target Organ Toxicity - Single Exposure 3 H336 May cause drowsiness or dizziness.

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







GHS02

GHS07

GHS08

Printing date 11/13/2023 Reviewed on 11/13/2023

Trade name: HBBLI Level 4 Standard

(Contd. of page 1)

· Signal word Danger

· Hazard-determining components of labeling:

Styrene 99+%

Hexane

4-Vinyl-1-Cyclohexene

Cyclohexane

· Hazard statements

Highly flammable liquid and vapor.

Causes skin irritation.

Causes serious eye irritation.

May cause cancer.

Suspected of damaging fertility or the unborn child.

May cause drowsiness or dizziness.

Causes damage to the hearing organs through prolonged or repeated exposure.

May be fatal if swallowed and enters airways.

· Precautionary statements

Obtain special instructions before use.

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

Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

Ground/bond container and receiving equipment.

Use explosion-proof electrical/ventilating/lighting/equipment.

Use only non-sparking tools.

Take precautionary measures against static discharge.

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

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).

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.

IF exposed or concerned: Get medical advice/attention.

Call a poison center/doctor if you feel unwell.

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.

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

Store in a well-ventilated place. Keep container tightly closed.

Store in a well-ventilated place. Keep cool.

Store locked up.

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

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



(Contd. on page 3)

(Contd. of page 2)

Safety Data Sheet acc. to OSHA HCS

Printing date 11/13/2023 Reviewed on 11/13/2023

Trade name: HBBLI Level 4 Standard

· HMIS-ratings (scale 0 - 4)

HEALTH *2 Health = *2 FIRE 3 Fire = 3 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: 100-40-3	4-Vinyl-1-Cyclohexene	30.0%
CAS: 100-42-5	Styrene 99+%	30.0%
CAS: 110-54-3	Hexane	30.0%
CAS: 110-82-7	Cyclohexane	10.0%

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.

- · 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:

CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

- · For safety reasons unsuitable extinguishing agents: Water with full jet
- · 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.

US

Printing date 11/13/2023 Reviewed on 11/13/2023

Trade name: HBBLI Level 4 Standard

(Contd. of page 3)

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).

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: 100-40-3	4-Vinyl-1-Cyclohexene	0.3 ppm
CAS: 100-42-5	Styrene 99+%	20 ppm
CAS: 110-54-3	Hexane	260 ррт
CAS: 110-82-7	Cyclohexane	300 ppm
· PAC-2:		
CAS: 100-40-3	4-Vinyl-1-Cyclohexene	210 ppm
CAS: 100-42-5	Styrene 99+%	130 ppm
CAS: 110-54-3	Hexane	2900* ppm
CAS: 110-82-7	Cyclohexane	1700* ppm
· PAC-3:		
CAS: 100-40-3	4-Vinyl-1-Cyclohexene	840 ppm
CAS: 100-42-5	Styrene 99+%	! 100* ppm
CAS: 110-54-3	Hexane 8	8600** ppm
CAS: 110-82-7	Cyclohexane	!0000** 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 ignition sources away - Do not smoke.

Protect against electrostatic charges.

Keep respiratory protective device available.

- · Conditions for safe storage, including any incompatibilities
- · Storage:
- · Requirements to be met by storerooms and receptacles: Store in a cool location.

(Contd. on page 5)

Printing date 11/13/2023 Reviewed on 11/13/2023

Trade name: HBBLI Level 4 Standard

(Contd. of page 4)

- · Information about storage in one common storage facility: Not required.
- · Further information about storage conditions:

Keep receptacle tightly sealed.

Store in cool, dry conditions in well sealed receptacles.

· 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 timit values that require monitoring at the workplace:
CAS: 100-40-3 4-Vinyl-1-Cycloherene

CAS: 100-40-3 4-Vinyl-1-Cyclohexene

Long-term value: 0.1 ppm

WEEL Long-term value: 4.4 mg/m³, 1 ppm

CAS: 100-42-5 Styrene 99+%

PELLong-term value: 100 ppm

Ceiling limit value: 200; 600* ppm

*5-min peak in any 3 hrs

RELShort-term value: 425 mg/m³, 100 ppm

Long-term value: 215 mg/m³, 50 ppm

TLVShort-term value: 20 ppm

Long-term value: 10 ppm

BEI, OTO, A3

CAS: 110-54-3 Hexane

Long-term value: 1800 mg/m³, 500 ppm PEL

RELLong-term value: 180 mg/m³, 50 ppm

TLVLong-term value: 50 ppm

Skin; BEI

CAS: 110-82-7 Cyclohexane

PELLong-term value: 1050 mg/m³, 300 ppm

RELLong-term value: 1050 mg/m³, 300 ppm

TLVLong-term value: 100 ppm

BEI

· Ingredients with biological limit values:

CAS: 100-42-5 Styrene 99+%

BEI 400 mg/g creatinine

LD50 Intraperitoneal: urine

Time: end of shift

LD50: Mandelic acid plus phenylglyoxylic acid (nonspecific)

40 μg/L

LD50 Intraperitoneal: urine

Time: end of shift LD50: Styrene

(Contd. on page 6)

Printing date 11/13/2023 Reviewed on 11/13/2023

Trade name: HBBLI Level 4 Standard

(Contd. of page 5)

CAS: 110-54-3 Hexane

BEI 0.5 mg/L

LD50 Intraperitoneal: urine

Time: end of shift

LD50: 2.5-Hexanedione without hydrolysis

CAS: 110-82-7 Cyclohexane

BEI NIC-50 mg/g creatinine

LD50 Intraperitoneal: -

Time: end of shift at end of workweek

LD50: NIC-1.2-Cyclohexanediol (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 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

LIS.

Printing date 11/13/2023 Reviewed on 11/13/2023

Trade name: HBBLI Level 4 Standard

(Contd. of page 6)

9 Physical and chemical proper	ties	
· Information on basic physical and chemical properties		
General Information	nemicui properiies	
· Appearance:		
Form:	Liquid	
Color:	Clear	
· Odor:	Organic Organic	
· Odor threshold:	Not determined.	
· pH-value:	Not determined.	
· Change in condition		
Melting point/Melting range:	Undetermined.	
Boiling point/Boiling range:	69 °C (156.2 °F)	
	-26 °C (-14.8 °F)	
· Flash point:		
· Flammability (solid, gaseous):	Highly flammable.	
· Auto igniting:	240 °C (464 °F)	
· Decomposition temperature:	Not determined.	
· Ignition temperature:	Product is not selfigniting.	
· Danger of explosion:	Product is not explosive. However, formation of explosive air/vape mixtures are possible.	
· Explosion limits:		
Lower:	1.2 Vol %	
Upper:	8.9 Vol %	
· Vapor pressure at 25 °C (77 °F):	13.6 hPa (10.2 mm Hg)	
· Density at 20 °C (68 °F):	0.7971 g/cm³ (6.6518 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	e r): Not determined.	
· Viscosity:		
Dynamic:	Not determined.	
Kinematic:	Not determined.	
· Solvent content:		
Organic solvents:	70.0 %	
VOC content:	70.00 %	
	558.0 g/l / 4.66 lb/gal	
Solids content:	0.0 %	
Other information	No further relevant information available.	

10 Stability and reactivity

· Reactivity No further relevant information available.

Printing date 11/13/2023 Reviewed on 11/13/2023

Trade name: HBBLI Level 4 Standard

(Contd. of page 7)

- · 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)

Inhalative LC50/4h 36.7 mg/l

- · Primary irritant effect:
- · on the skin: Irritant to skin and mucous membranes.
- · on the eye: Irritating effect.
- · Sensitization: No sensitizing effects known.
- · Additional toxicological information:

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

· Carcinogenic categories

,	ional Agency for Research on Cancer)	
	4-Vinyl-1-Cyclohexene	2 <i>B</i>
CAS: 100-42-5	Styrene 99+%	2A
· NTP (National Toxicology Program)		
CAS: 100-42-5	Styrene 99+%	R
· OSHA-Ca (Occupational Safety & Health Administration)		
None of the ing	redients 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.

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

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

(Contd. on page 9)

Printing date 11/13/2023 Reviewed on 11/13/2023

Trade name: HBBLI Level 4 Standard

 $\cdot \textit{Other adverse effects} \ \textit{No further relevant information available}.$

(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.

· UN-Number	
· DOT, IMDG, IATA	UN1993
· UN proper shipping name	
·DOT	Flammable liquids, n.o.s. (Hexane, Styrene 99+%, 4-Vinyl-1
IMDC IATA	Cyclohexene, Cyclohexane)
· IMDG, IATA	FLAMMABLE LIQUID, N.O.S. (Hexane, Styrene 99+%, 4-Viny, 1-Cyclohexene, Cyclohexane)
· Transport hazard class(es)	
\cdot DOT	
RAMABLE LOUD	
· Class	3 Flammable liquids
· Label	3
· IMDG, IATA	
· Class	3 Flammable liquids
· Label	3
· Packing group	
· DOT, IMDG, IATA	II
· Environmental hazards:	Product contains environmentally hazardous substances Cyclohexane
· Special precautions for user	Warning: Flammable liquids
· Hazard identification number (Kemler	code): 33
· EMS Number:	F-E,S-D
· Stowage Category	В
· Transport in bulk according to Annex I	
MARPOL73/78 and the IBC Code	Not applicable.

(Contd. on page 10)

Printing date 11/13/2023 Reviewed on 11/13/2023

Trade name: HBBLI Level 4 Standard

	(Contd. of page 9
· Transport/Additional information:	
\cdot DOT	
· Quantity limitations	On passenger aircraft/rail: 5 L
-	On cargo aircraft only: 60 L
· IMDG	
· Limited quantities (LQ)	5L
· 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 1993 FLAMMABLE LIQUID, N.O.S. (HEXANE, STYREN
<u> </u>	99+%, 4-VINYL-1-CYCLOHEXENE, CYCLOHEXANE), 3, II

Safety, health and environmental regulations/legislation specific for the Sara	substance or mixture
Section 355 (extremely hazardous substances):	
None of the ingredients is listed.	
Section 313 (Specific toxic chemical listings):	
CAS: 100-42-5 Styrene 99+%	
CAS: 110-54-3 Hexane	
CAS: 110-82-7 Cyclohexane	
TSCA (Toxic Substances Control Act):	
4-Vinyl-1-Cyclohexene	ACTIV
Styrene 99+%	ACTIV
Hexane	ACTIV
Cyclohexane	ACTIV
Hazardous Air Pollutants	·
CAS: 100-42-5 Styrene 99+%	
CAS: 110-54-3 Hexane	
Proposition 65	
Chemicals known to cause cancer:	
CAS: 100-40-3 4-Vinyl-1-Cyclohexene	
CAS: 100-42-5 Styrene 99+%	
Chemicals known to cause reproductive toxicity for females:	
CAS: 100-40-3 4-Vinyl-1-Cyclohexene	
Chemicals known to cause reproductive toxicity for males:	
CAS: 110-54-3 Hexane	

Printing date 11/13/2023 Reviewed on 11/13/2023

Trade name: HBBLI Level 4 Standard

(Contd. of page 10)

· Carcinogenic categories

,	nental Protection Agency)	
CAS: 110-54-3	Hexane	II
CAS: 110-82-7	Cyclohexane	I
· TLV (Threshold Limit Value)		
	4-Vinyl-1-Cyclohexene	A3
CAS: 100-42-5	Styrene 99+%	A4
· 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







GHS02 GHS07 GHS0

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

Styrene 99+%

Hexane

4-Vinyl-1-Cyclohexene

Cyclohexane

· Hazard statements

Highly flammable liquid and vapor.

Causes skin irritation.

Causes serious eye irritation.

May cause cancer.

Suspected of damaging fertility or the unborn child.

May cause drowsiness or dizziness.

Causes damage to the hearing organs through prolonged or repeated exposure.

May be fatal if swallowed and enters airways.

· Precautionary statements

Obtain special instructions before use.

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

Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

Ground/bond container and receiving equipment.

Use explosion-proof electrical/ventilating/lighting/equipment.

Use only non-sparking tools.

Take precautionary measures against static discharge.

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

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).

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.

(Contd. on page 12)

Printing date 11/13/2023 Reviewed on 11/13/2023

Trade name: HBBLI Level 4 Standard

(Contd. of page 11)

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

IF exposed or concerned: Get medical advice/attention.

Call a poison center/doctor if you feel unwell.

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.

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

Store in a well-ventilated place. Keep container tightly closed.

Store in a well-ventilated place. Keep cool.

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.

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, 11-13-2023: creation date for SDS_STN/CMC 11/13/2023

· 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

Flammable Liquids 2: Flammable liquids – Category 2

Skin Irritation 2: Skin corrosion/irritation – Category 2

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

Carcinogenicity 1B: Carcinogenicity - Category 1B

 $Toxic\ to\ Reproduction\ 2:\ Reproductive\ toxicity-Category\ 2$

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

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

Aspiration Hazard 1: Aspiration hazard - Category 1

US