Safety Data Sheet acc. to OSHA HCS

Printing date 03/09/2020

Reviewed on 03/09/2020

· Product identij	fier					
• Trade name: H						
1	Level 4					
Article number	r: ARL01	1				
		of the safety data	sheet			
• Manufacturer Aqua Solutions		:			AQUA	
6913 Highway					SOLUTIONS	
DEER PARK,		-				
USA 800-256-2586						
Information de	enartmen	t:				
Technical Coo	rdinator					
Sherman Nelso • Emergency tel		n@aquasolutions	s.org			
Chemtrec: 800						
Canutec: 613-9	996-6666					
Hazard(s) ia	<i>lentifica</i>	tion				
	- f 41					
· Classification	oj ine sul	bstance or mixtur	re			
GHS	SO2 Flam	0				
GHS GHS	SO2 Flam	ę				
\checkmark			guid and vapor.			
\checkmark		e hly flammable liq	quid and vapor.			
Flam. Liq. 2 H		hly flammable liq	uid and vapor.			
Flam. Liq. 2 H	H225 Hig	hly flammable liq	quid and vapor.			
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(Contd. of page 1) · Signal word Danger · Hazard-determining components of labeling: Hexane Styrene 99+% 4-Vinyl-1-Cyclohexene Cvclohexane · Hazard statements Highly flammable liquid and vapor. Causes skin irritation. Causes serious eye irritation. Suspected of causing 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 for extinction: CO2, powder or water spray. 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) Health = 2



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· 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: 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
- \cdot Special hazards arising from the substance or mixture

During heating or in case of fire poisonous gases are produced.

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· 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 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 item 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 ppm
CAS: 110-82-7	Cyclohexane		300 ppm
· PAC-2:			
CAS: 100-40-3	4-Vinyl-1-Cyclohexene	2	210 ppm
CAS: 100-42-5	Styrene 99+%	1	30 ppm
CAS: 110-54-3	Hexane	2	2900* ppm
CAS: 110-82-7	Cyclohexane	1	700* ppm
· PAC-3:			
CAS: 100-40-3	4-Vinyl-1-Cyclohexene	340) ppm
CAS: 100-42-5	Styrene 99+%	110	00* ppm
CAS: 110-54-3	Hexane	860	0** ppm
CAS: 110-82-7	Cyclohexane	100	000** 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.

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- · Conditions for safe storage, including any incompatibilities
- · Storage:
- Requirements to be met by storerooms and receptacles: Store in a cool location.
- · 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 item 7.

· Control parameters

· Comp	ponents with limit values that require monitoring at the workplace:
CAS:	100-40-3 4-Vinyl-1-Cyclohexene
TLV	Long-term value: 0.44 mg/m ³ , 0.1 ppm
WEEI	L Long-term value: 4.4 mg/m³, 1 ppm
CAS:	100-42-5 Styrene 99+%
PEL	Long-term value: 100 ppm Ceiling limit value: 200; 600* ppm *5-min peak in any 3 hrs
REL	Short-term value: 425 mg/m³, 100 ppm Long-term value: 215 mg/m³, 50 ppm
TLV	Short-term value: (170) mg/m ³ , (40) NIC-20 ppm Long-term value: (85) mg/m ³ , (20) NIC-10 ppm BEI, NIC-A3, NIC-OTO
CAS:	110-54-3 Hexane
PEL	Long-term value: 1800 mg/m ³ , 500 ppm
REL	Long-term value: 180 mg/m³, 50 ppm
TLV	Long-term value: 176 mg/m³, 50 ppm Skin; BEI
CAS:	110-82-7 Cyclohexane
PEL	Long-term value: 1050 mg/m ³ , 300 ppm
REL	Long-term value: 1050 mg/m³, 300 ppm
TLV	Long-term value: 344 mg/m³, 100 ppm
· Ingre	dients with biological limit values:
CAS:	100-42-5 Styrene 99+%
1 1	400 mg/g creatinine LD50 Intraperitoneal: urine Time: end of shift LD50: Mandelic acid plus phenylglyoxylic acid (nonspecific)
1 1	0.2 mg/L LD50 Intraperitoneal: venous blood Time: end of shift LD50: Styrene (semi-quantitative)
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CAS: 110-54-3 Hexane

BEI 0.4 mg/L

LD50 Intraperitoneal: urine Time: end of shift at end of workweek LD50: 2.5-Hexanedione without hydrolysis

· 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 \cdot **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

Information on basic physic	cal and chemical properties	
· General Information		
· Appearance:		
Form:	Liquid	
Color:	Clear-Pale Yellow	
• Odor:	Strong	
• Odor threshold:	Not determined.	

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pH-value:	Not determined.
Change in condition Melting point/Melting range: Boiling point/Boiling range:	Undetermined. 69 °C (156.2 °F)
Flash point:	-26 °C (-78.8 °F)
Flammability (solid, gaseous):	Not applicable.
Decomposition temperature:	Not determined.
Auto igniting:	Product is not selfigniting.
Danger of explosion:	Product is not explosive. However, formation of explosive air/vapo mixtures are possible.
Explosion limits: Lower: Upper:	1.2 Vol % 8.9 Vol %
· Vapor pressure at 25 °C (77 °F):	13.6 hPa (10.2 mm Hg)
· Density at 20 °C (68 °F): · Relative density · Vapor density · Evaporation rate	0.7974 g/cm ³ (6.6543 lbs/gal) Not determined. Not determined. Not determined.
· Solubility in / Miscibility with Water:	Not miscible or difficult to mix.
Partition coefficient (n-octanol/wate	r): Not determined.
· Viscosity: Dynamic: Kinematic:	Not determined. Not determined.
Solvent content: Organic solvents: VOC content:	70.0 % 70.00 % 558.2 g/l / 4.66 lb/gal
Solids content: Other information	0.0 % 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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11 Toxicological information

· Information on toxicological effects

• Acute toxicity:

· LD/LC50 values that are relevant for classification:

ATE (Acute Toxicity Estimate)

Oral LD50 4,343 mg/kg (rat)

Inhalative LC50/4h 90 mg/l (mouse)

CAS: 100-42-5 Styrene 99+%

Inhalative LC50/4h 11 mg/l (ATE)

· 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

· IARC (International Agency for Research on Cancer)				
CAS: 100-40-3 4-Vinyl-1-Cyclohexene	2B			
CAS: 100-42-5 Styrene 99+%	2B			
· NTP (National Toxicology Program)				
CAS: 100-42-5 Styrene 99+%	R			
· 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 2 (Self-assessment): hazardous for water

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

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.

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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. (Hexanes, 4-Vinyl-1-Cyclohexene Cyclohexane, Styrene monomer, stabilized)
IMDG	FLAMMABLE LIQUID, N.O.S. (HEXANES, 4-Vinyl-1-Cyclohexen
	CYCLOHEXANE, STYRENE MONOMER, STABILIZED), MARIN
IATA	POLLUTANT FLAMMABLE LIQUID, N.O.S. (HEXANES, 4-Vinyl-1-Cyclohexen
	CYCLOHEXANE, STYRENE MONOMER, STABILIZED)
Transport hazard class(es)	
DOT	
PLAMIABLE LIQUO	
3	
Class	3 Flammable liquids
Label	3
IMDG	
3	
Class	3 Flammable liquids
Label	3
IATA	
3	
Class	3 Flammable liquids 3
Label	5
Packing group	Ш

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Environmental hazards:	Product contains environmentally hazardous substances Cyclohexane
Marine pollutant:	Symbol (fish and tree)
Special precautions for user	Warning: Flammable liquids
Danger code (Kemler):	33
EMS Number:	F- E , S - D
Stowage Category	В
Transport in bulk according to Annex	II of
MARPOL73/78 and the IBC Code	Not applicable.
Transport/Additional information:	
DOT	
Quantity limitations	On passenger aircraft/rail: 5 L
	On cargo aircraft only: 60 L
· IMDG	
Limited quantities (LQ)	5L
Excepted quantities $(\widetilde{E}Q)$	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. (HEXANES, 4-VINYL-1
-	CYCLOHEXENE, CYCLOHEXANE, STYRENE MONOMER
	STABILIZED), 3, II

15 Regulatory information

 \cdot Safety, health and environmental regulations/legislation specific for the substance or mixture \cdot Sara

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	ACTI
Styrene 99+%	ACTI
Hexane	ACTI
Cyclohexane	ACTI
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	

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A3

A4

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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

· Chemicals known to cause developmental toxicity:

None of the ingredients is listed.

· Carcinogenic categories

· EPA (Environmental Protection Agency)

CAS: 110-54-3 Hexane

CAS: 110-82-7 Cyclohexane

• TLV (Threshold Limit Value established by ACGIH)

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

CAS: 100-42-5 Styrene 99+%

· 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*



· Signal word Danger

· Hazard-determining components of labeling: Hexane Styrene 99+% 4-Vinyl-1-Cyclohexene Cyclohexane · Hazard statements Highly flammable liquid and vapor. Causes skin irritation. Causes serious eye irritation. Suspected of causing 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.

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(Contd. of page 11) 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 for extinction: CO2, powder or water spray. 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. · 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 Revision 0.0, 03-06-2020: Creation date for SDS. STN 03/09/2020 / -· Abbreviations and acronyms: IMDG: International Maritime Code for Dangerous Goods DOT: US Department of Transportation IATA: International Air Transport Association ACGIH: American Conference of Governmental Industrial Hygienists 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 Flam. Liq. 2: Flammable liquids - Category 2 Skin Irrit. 2: Skin corrosion/irritation – Category 2 Eye Irrit. 2A: Serious eye damage/eye irritation - Category 2A

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Carc. 2: Carcinogenicity – Category 2 Repr. 2: Reproductive toxicity – Category 2 STOT SE 3: Specific target organ toxicity (single exposure) – Category 3 STOT RE 1: Specific target organ toxicity (repeated exposure) – Category 1 Asp. Tox. 1: Aspiration hazard – Category 1