Printing date 10/04/2017 Reviewed on 10/04/2017

1 Identification

· Product identifier

· Trade name: <u>Isatin/Chloroform/Benzene</u> <u>Prepared to ASTM D1865-86</u>

· Article number: AM135S4

· 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 sherman@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

Flam. Liq. 2 H225 Highly flammable liquid and vapor.



GHS06 Skull and crossbones

Acute Tox. 3 H311 Toxic in contact with skin.



GHS08 Health hazard

Muta. 1B H340 May cause genetic defects.

Carc. 1A H350 May cause cancer.

Repr. 2 H361 Suspected of damaging fertility or the unborn child.

STOT RE 1 H372 Causes damage to organs through prolonged or repeated exposure.

Asp. Tox. 1 H304 May be fatal if swallowed and enters airways.



GHS07

Acute Tox. 4 H302 Harmful if swallowed.

Skin Irrit. 2 H315 Causes skin irritation.

Eye Irrit. 2A H319 Causes serious eye irritation.

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

 (Contd. on page 2)

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· Hazard pictograms









GHS02

2 GHS06

GHS07

· Signal word Danger

· Hazard-determining components of labeling:

Chloroform

Benzene

Isatin, 2.3-Indolinedione

· Hazard statements

Highly flammable liquid and vapor.

Harmful if swallowed.

Toxic in contact with skin.

Causes skin irritation.

Causes serious eye irritation.

May cause genetic defects.

May cause cancer.

Suspected of damaging fertility or the unborn child.

Causes damage to 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.

Keep container tightly closed.

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.

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

IF SWALLOWED: Immediately call a POISON CENTER/doctor.

If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

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.

Get medical advice/attention if you feel unwell.

Specific treatment (see on this label).

Rinse mouth.

Do NOT induce vomiting.

If skin irritation occurs: Get medical advice/attention.

If eye irritation persists: Get medical advice/attention.

Take off immediately all contaminated clothing and wash it before reuse.

In case of fire: Use for extinction: CO2, powder or water spray.

Store in a well-ventilated place. Keep cool.

Store locked up.

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

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(Contd. of page 2)

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



Health = 3 Fire = 3Reactivity = 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: 67-66-3 Chloroform	87.119%
CAS: 71-43-2 Benzene	12.734%
· Table of Nonhazardous Ingredients	
CAS: 91-56-5 Isatin, 2,3-Indolinedione	0.147%

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.

In case of irregular breathing or respiratory arrest provide artificial respiration.

- · 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: 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.

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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 No further relevant information available.
- · Advice for firefighters
- · Protective equipment: No special measures required.

6 Accidental release measures

· Personal precautions, protective equipment and emergency procedures

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

	•	
· <i>PAC-1</i> :		
CAS: 67-66-3	· ·	2 ppm
CAS: 71-43-2	Benzene	52 ppm
· PAC-2:		
CAS: 67-66-3	Chloroform	64 ppm
CAS: 71-43-2	Benzene	800 ppm
· PAC-3:		
CAS: 67-66-3	v	3,200 ppm
CAS: 71-43-2	Benzene	4000* ppm

7 Handling and storage

- · Handling:
- · Precautions for safe handling Ensure good ventilation/exhaustion at the workplace.
- · Information about protection against explosions and fires:

Keep ignition sources away - Do not smoke.

Protect against electrostatic charges.

- · 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.

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(Contd. of page 4)

· 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
- · Components with limit values that require monitoring at the workplace:

CAS: 67-66-3 Chloroform

PEL Ceiling limit value: 240 mg/m³, 50 ppm

REL Short-term value: 9.78* mg/m³, 2* ppm *60-min; See Pocket Guide App. A

TLV Long-term value: 49 mg/m³, 10 ppm

CAS: 71-43-2 Benzene

PEL Short-term value: 15* mg/m³, 5* ppm

Long-term value: 3* mg/m³, 1* ppm

*table Z-2 for exclusions in 29CFR1910.1028(d)

REL Short-term value: 1 ppm

Long-term value: 0.1 ppm

See Pocket Guide App. A

TLV Short-term value: 8 mg/m³, 2.5 ppm

Long-term value: 1.6 mg/m³, 0.5 ppm

Skin; BEI

· Ingredients with biological limit values:

CAS: 71-43-2 Benzene

BEI 25 μg/g creatinine

LD50 Intraperitoneal: urine Time: end of shift Parameter

LD50: S-Phenylmercapturic acid (background

500 μg/g creatinine

LD50 Intraperitoneal: urine

Time: end of shift

LD50: t,t-Muconic acid (background)

- · 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.

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· 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

Information on basic physical and	chemical properties
General Information	
Appearance:	
Form:	Liquid
Color:	Orange
Odor:	Chloroform-benzene
Odor threshold:	Not determined.
pH-value:	Not determined.
Change in condition	
Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	61 °C (142 °F)
Flash point:	-11 °C (12 °F)
Flammability (solid, gaseous):	Not applicable.
Ignition temperature:	555 °C (1031 °F)
Decomposition temperature:	Not determined.
Auto igniting:	Product is not selfigniting.
Danger of explosion:	Product is not explosive. However, formation of explosive air/vap mixtures are possible.
Explosion limits:	
Lower:	1.2 Vol %

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		(Contd. of page
Upper:	8.0 Vol %	
Vapor pressure at 20 °C (68 °F):	210 hPa (158 mm Hg)	
Density at 20 °C (68 °F):	1.35896 g/cm³ (11.341 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:	12.7 %	
VOC content:	12.7 %	
	173.1 g/l / 1.44 lb/gl	
Solids content:	0.1 %	
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 Tox	cicity Estimate)	
Oral	LD50	561 mg/kg
Dermal	LD50	377 mg/kg (mouse)
CAS: 67-66-3 C	hloroform	
Oral	LD50	500 mg/kg (ATE)
Dermal	LD50	>20000 mg/kg (rabbit)
Inhalative	LC50/4 h	47702 mg/l (rat)
Irritation of skin	Skin Corrosion/Irritation	mild (rabbit)
Irritation of eye.	Eye damage/eye irritation	irritating (rabbit)
	-	(Contd. on page 8

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CAS: 71-43-2 Benzene		
Oral	LD50	4894 mg/kg (rat)
Dermal	LD50	48 mg/kg (mouse)
Inhalative	LC50/4 h	9980 mg/l (mouse)

- · 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:

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

Toxic

Harmful

Irritant

The product can cause inheritable damage.

· Carcinogenic categories

· IARC (Interna	ational Agency for Research on Cancer)	
CAS: 67-66-3	Chloroform	2B
CAS: 71-43-2	Benzene	1
'	l Toxicology Program)	
CAS: 67-66-3	v	R
CAS: 71-43-2	Benzene	K
· OSHA-Ca (Oc	cupational Safety & Health Administration)	
CAS: 71-43-2	Benzene	

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.
- · 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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(Contd. of page 8)

- · 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. (Benzene)
IMDG, IATA	FLAMMABLE LIQUID, N.O.S. (BENZENE)
Transport hazard class(es)	
DOT	
P.AMAMILE LOUD 3	
Class	3 Flammable liquids
Label	3
IMDG, IATA	
Class	3 Flammable liquids
Label	3
Packing group	
DOT, IMDG, IATA	II
Environmental hazards:	Not applicable.
Special precautions for user	Warning: Flammable liquids
Danger code (Kemler):	336
EMS Number:	<i>F-E,<u>S-E</u></i>
Segregation groups	Liquid halogenated hydrocarbons
Stowage Category	В
Transport in bulk according to Annex II MARPOL73/78 and the IBC Code	I of Not applicable.
	Tot applicable.
Transport/Additional information:	
DOT	0
Quantity limitations	On passenger aircraft/rail: 1 L On cargo aircraft only: 60 L
 IMDG	
IMDG Limited quantities (LQ)	1L
Eimuea quantities (EQ) Excepted quantities (EQ)	Code: E2
Excepteu quantities (EQ)	Maximum net quantity per inner packaging: 30 ml
	Maximum net quantity per timer packaging: 500 ml

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· UN "Model Regulation":

UN 1993 FLAMMABLE LIQUIDS, N.O.S. (BENZENE), 3, II

15 Regulatory information

- · Safety, health and environmental regulations/legislation specific for the substance or mixture
- · Sara
- · Section 355 (extremely hazardous substances):

CAS: 67-66-3 Chloroform

· Section 313 (Specific toxic chemical listings):

CAS: 67-66-3 Chloroform

CAS: 71-43-2 Benzene

· TSCA (Toxic Substances Control Act):

All ingredients are listed.

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

CAS: 67-66-3 Chloroform

CAS: 71-43-2 Benzene

· Chemicals known to cause reproductive toxicity for females:

None of the ingredients is listed.

· Chemicals known to cause reproductive toxicity for males:

CAS: 71-43-2 Benzene

· Chemicals known to cause developmental toxicity:

CAS: 67-66-3 Chloroform

CAS: 71-43-2 Benzene

- · Carcinogenic categories
- · EPA (Environmental Protection Agency)

 CAS: 67-66-3
 Chloroform
 B2, L, NL

 CAS: 71-43-2
 Benzene
 A, K/L

· TLV (Threshold Limit Value established by ACGIH)

 CAS: 67-66-3
 Chloroform
 A3

 CAS: 71-43-2
 Benzene
 A1

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

CAS: 67-66-3 Chloroform

CAS: 71-43-2 Benzene

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









GHS02

GHS06

GHS07

GHS08

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· Signal word Danger

· Hazard-determining components of labeling:

Chloroform

Benzene

Isatin, 2,3-Indolinedione

· Hazard statements

Highly flammable liquid and vapor.

Harmful if swallowed.

Toxic in contact with skin.

Causes skin irritation.

Causes serious eye irritation.

May cause genetic defects.

May cause cancer.

Suspected of damaging fertility or the unborn child.

Causes damage to 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.

Keep container tightly closed.

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.

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

IF SWALLOWED: Immediately call a POISON CENTER/doctor.

If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

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.

Get medical advice/attention if you feel unwell.

Specific treatment (see on this label).

Rinse mouth.

Do NOT induce vomiting.

If skin irritation occurs: Get medical advice/attention.

If eye irritation persists: Get medical advice/attention.

Take off immediately all contaminated clothing and wash it before reuse.

In case of fire: Use for extinction: CO2, powder or water spray.

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:

· 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.

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· 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

10-04-2017: review SDS for accuracy. STN

Revision 0.0, 09-17-2015: Creation Date for SDS. STN

10/04/2017 / -

· Abbreviations and acronyms:

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

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

 $Flam.\ Liq.\ 2: Flammable\ liquids-Category\ 2$

Acute Tox. 4: Acute toxicity - Category 4

 $Acute\ Tox.\ 3: Acute\ toxicity-Category\ 3$

Skin Irrit. 2: Skin corrosion/irritation – Category 2

Eye Irrit. 2A: Serious eye damage/eye irritation - Category 2A

Muta. 1B: Germ cell mutagenicity - Category 1B

Carc. 1A: Carcinogenicity - Category 1A

Repr. 2: Reproductive toxicity – Category 2

STOT RE 1: Specific target organ toxicity (repeated exposure) – Category 1

Asp. Tox. 1: Aspiration hazard - Category 1

HC