

# Safety Data Sheet

acc. to OSHA HCS

Printing date 10/04/2017

Reviewed on 10/04/2017

## 1 Identification

- **Product identifier**
- **Trade name:** Sulfur Standard 25.0 ppm  
as S, for LPG
- **Article number:** AM220
- **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.



GHS08 Health hazard

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



GHS07

STOT SE 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

- **Signal word** Danger

- **Hazard-determining components of labeling:**

Pentane

- **Hazard statements**

Highly flammable liquid and vapor.

May cause drowsiness or dizziness.

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*May be fatal if swallowed and enters airways.*

**· Precautionary statements**

*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.*

*Avoid breathing dust/fume/gas/mist/vapors/spray*

*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.*

*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.*

*Call a POISON CENTER/doctor if you feel unwell.*

*Do NOT induce vomiting.*

*In case of fire: Use for extinction: CO<sub>2</sub>, 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 = 0

Fire = 4

Reactivity = 0

**· HMIS-ratings (scale 0 - 4)**



Health = 3

Fire = 4

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: 109-66-0	Pentane	99.978%
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**· Table of Nonhazardous Ingredients**

CAS: 540-84-1	2,2,4-Trimethylpentane (Iso-Octane)	0.016%
CAS: 111-31-9	Hexanethiol 96%	0.002%
CAS: 110-66-7	Pentanethiol, 98% (n-Amyl Mercaptan)	0.001%
CAS: 109-79-5	Buthanethiol (Butyl Mercaptan)	0.001%
CAS: 107-03-9	n-Propanethiol	0.001%

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CAS: 75-08-1 Ethanethiol (Ethyl Mercaptan)

0.001%

## 4 First-aid measures

- **Description of first aid measures**
- **After inhalation:** Supply fresh air; consult doctor in case of complaints.
- **After skin contact:** Generally the product does not irritate the skin.
- **After eye contact:** Rinse opened eye for several minutes under running water.
- **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:**  
CO<sub>2</sub>, 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**

- **PAC-1:**

CAS: 109-66-0	Pentane	3000* ppm
CAS: 540-84-1	2,2,4-Trimethylpentane (Iso-Octane)	230 ppm
CAS: 111-31-9	Hexanethiol 96%	0.045 ppm
CAS: 109-79-5	Buthanethiol (Butyl Mercaptan)	4.5 ppm
CAS: 107-03-9	n-Propanethiol	0.045 ppm
CAS: 75-08-1	Ethanethiol (Ethyl Mercaptan)	1.0 ppm

- **PAC-2:**

CAS: 109-66-0	Pentane	33000*** ppm
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CAS: 540-84-1	2,2,4-Trimethylpentane (Iso-Octane)	830 ppm
CAS: 111-31-9	Hexanethiol 96%	0.5 ppm
CAS: 109-79-5	Buthanethiol (Butyl Mercaptan)	50 ppm
CAS: 107-03-9	n-Propanethiol	0.5 ppm
CAS: 75-08-1	Ethanethiol (Ethyl Mercaptan)	120 ppm

· **PAC-3:**

CAS: 109-66-0	Pentane	200000*** ppm
CAS: 540-84-1	2,2,4-Trimethylpentane (Iso-Octane)	5000* ppm
CAS: 111-31-9	Hexanethiol 96%	48 ppm
CAS: 109-79-5	Buthanethiol (Butyl Mercaptan)	2,500 ppm
CAS: 107-03-9	n-Propanethiol	320 ppm
CAS: 75-08-1	Ethanethiol (Ethyl Mercaptan)	360 ppm

## 7 Handling and storage

- **Handling:**
- **Precautions for safe handling** No special precautions are necessary if used correctly.
- **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.
- **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: 109-66-0 Pentane**

PEL	Long-term value: 2950 mg/m <sup>3</sup> , 1000 ppm
REL	Long-term value: 350 mg/m <sup>3</sup> , 120 ppm Ceiling limit value: 1800* mg/m <sup>3</sup> , 610* ppm *15-min
TLV	Long-term value: 2950 mg/m <sup>3</sup> , 1000 ppm

- **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.

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Wash hands before breaks and at the end of work.

· **Breathing equipment:** Not required.

· **Protection of hands:**

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

## 9 Physical and chemical properties

· **Information on basic physical and chemical properties**

· **General Information**

· **Appearance:**

Form: Liquid

Color: Clear

· **Odor:** Sulfur odor

· **Odor threshold:** Not determined.

· **pH-value:** Not determined.

· **Change in condition**

Melting point/Melting range: -129.7 °C (-201 °F)

Boiling point/Boiling range: 36 °C (97 °F)

· **Flash point:** -35 °C (-31 °F)

· **Flammability (solid, gaseous):** Not applicable.

· **Ignition temperature:** 285 °C (545 °F)

· **Decomposition temperature:** Not determined.

· **Auto igniting:** Product is not selfigniting.

· **Danger of explosion:** Product is not explosive. However, formation of explosive air/vapor mixtures are possible.

· **Explosion limits:**

Lower: 1.4 Vol %

Upper: 7.8 Vol %

· **Vapor pressure at 20 °C (68 °F):** 573 hPa (430 mm Hg)

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- |   |  |
|---|--|
| · <b>Density at 20 °C (68 °F):</b>                                    | 0.62626 g/cm <sup>3</sup> (5.226 lbs/gal)  |
| · <b>Relative density</b>   | Not determined.                            |
| · <b>Vapor density</b>  | Not determined.                            |
| · <b>Evaporation rate</b>   | Not determined.                            |
|   |  |
| · <b>Solubility in / Miscibility with<br/>Water at 20 °C (68 °F):</b> | 0.01 g/l                                   |
| · <b>Partition coefficient (n-octanol/water):</b> Not determined.     |  |
| · <b>Viscosity:</b>   |  |
| <b>Dynamic:</b>   | Not determined.                            |
| <b>Kinematic:</b>   | Not determined.                            |
|   |  |
| · <b>Solvent content:</b>   |  |
| <b>Organic solvents:</b>  | 100.0 %                                    |
| <b>VOC content:</b>   | 100.0 %                                    |
|   | 626.2 g/l / 5.23 lb/gl                     |
| · <b>Other information</b>  | 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	5001 mg/kg (mouse)
Dermal	LD50	3001 mg/kg (rabbit)

### CAS: 109-66-0 Pentane

Oral	LD50	5000 mg/kg (mouse)
Dermal	LD50	3000 mg/kg (rabbit)
Inhalative	LC50/4 h	-4h-364000 mg/l (rat)

- **Primary irritant effect:**
- **on the skin:** No irritant effect.
- **on the eye:** No irritating effect.
- **Sensitization:** No sensitizing effects known.
- **Additional toxicological information:**

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

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· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**

None of the ingredients is listed.

· **NTP (National Toxicology Program)**

None of the ingredients is listed.

· **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.

## 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.

## 14 Transport information

· **UN-Number**

· **DOT, IMDG, IATA**

UN1993

· **UN proper shipping name**

· **DOT**

· **IMDG**

· **IATA**

Flammable liquids, n.o.s. (Pentanes)

FLAMMABLE LIQUID, N.O.S. (PENTANES), MARINE POLLUTANT

FLAMMABLE LIQUID, N.O.S. (PENTANES)

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· **Transport hazard class(es)**

· **DOT**



· **Class** 3 Flammable liquids  
· **Label** 3

· **IMDG**



· **Class** 3 Flammable liquids  
· **Label** 3

· **IATA**



· **Class** 3 Flammable liquids  
· **Label** 3

· **Packing group**  
· **DOT, IMDG, IATA**

II

· **Environmental hazards:** Product contains environmentally hazardous substances: 2,2,4-Trimethylpentane (Iso-Octane), Pentane

· **Marine pollutant:** Yes  
Symbol (fish and tree)

· **Special precautions for user** Warning: Flammable liquids  
· **Danger code (Kemler):** 33  
· **EMS Number:** F-E,S-E  
· **Stowage Category** B

· **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)** 1L  
· **Excepted quantities (EQ)** Code: E2  
Maximum net quantity per inner packaging: 30 ml  
Maximum net quantity per outer packaging: 500 ml

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· **UN "Model Regulation":** UN 1993 FLAMMABLE LIQUIDS, N.O.S. (PENTANES), 3, II

## 15 Regulatory information

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

- **Section 355 (extremely hazardous substances):**

None of the ingredients is listed.

- **Section 313 (Specific toxic chemical listings):**

None of the ingredients is listed.

- **TSCA (Toxic Substances Control Act):**

All ingredients are listed.

- **Proposition 65**

- **Chemicals known to cause cancer:**

None of the ingredients is listed.

- **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients is listed.

- **Chemicals known to cause reproductive toxicity for males:**

None of the ingredients is listed.

- **Chemicals known to cause developmental toxicity:**

None of the ingredients is listed.

- **Carcinogenic categories**

- **EPA (Environmental Protection Agency)**

CAS: 540-84-1 | 2,2,4-Trimethylpentane (Iso-Octane)

II

- **TLV (Threshold Limit Value established by ACGIH)**

None of the ingredients is listed.

- **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

GHS08

- **Signal word** *Danger*

- **Hazard-determining components of labeling:**

Pentane

- **Hazard statements**

Highly flammable liquid and vapor.

May cause drowsiness or dizziness.

May be fatal if swallowed and enters airways.

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- **Precautionary statements**

*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.*

*Avoid breathing dust/fume/gas/mist/vapors/spray*

*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.*

*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.*

*Call a POISON CENTER/doctor if you feel unwell.*

*Do NOT induce vomiting.*

*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**

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

*Creation date for SDS 01-16-2015. 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*

*Flam. Liq. 2: Flammable liquids – Category 2*

*STOT SE 3: Specific target organ toxicity (single exposure) – Category 3*

*Asp. Tox. 1: Aspiration hazard – Category 1*