

# Safety Data Sheet

acc. to OSHA HCS

Printing date 05/23/2024

Reviewed on 05/23/2024

## 1 Identification

- **Product identifier**
- **Trade name:** Maleic Anhydride 0.6% w/v  
in Toluene
- **Article number:** ND462
- **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](mailto: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

Sensitization - Respiratory 1

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Toxic to Reproduction 2

H361 Suspected of damaging fertility or the unborn child.

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

Aspiration Hazard 1

H304 May be fatal if swallowed and enters airways.



GHS07

Skin Irritation 2

H315 Causes skin irritation.

Sensitization - Skin 1

H317 May cause an allergic skin reaction.

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).

(Contd. on page 2)

# Safety Data Sheet

acc. to OSHA HCS

Printing date 05/23/2024

Reviewed on 05/23/2024

**Trade name: Maleic Anhydride 0.6% w/v  
in Toluene**

(Contd. of page 1)

· **Hazard pictograms**



GHS02    GHS07    GHS08

· **Signal word** *Danger*

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

*Toluene  
maleic anhydride*

· **Hazard statements**

*Highly flammable liquid and vapor.  
Causes skin irritation.  
May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
May cause an allergic skin reaction.  
Suspected of damaging fertility or the unborn child.  
May cause drowsiness or dizziness.  
May cause 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.  
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.  
Use only outdoors or in a well-ventilated area.  
Contaminated work clothing must not be allowed out of the workplace.  
Wear protective gloves/protective clothing/eye protection/face protection.  
[In case of inadequate ventilation] wear respiratory 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 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 or rash occurs: Get medical advice/attention.  
If experiencing respiratory symptoms: Call a poison center/doctor.  
Wash contaminated clothing before reuse.  
In case of fire: Use CO<sub>2</sub>, 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.*

(Contd. on page 3)

# Safety Data Sheet

acc. to OSHA HCS

Printing date 05/23/2024

Reviewed on 05/23/2024

**Trade name: Maleic Anhydride 0.6% w/v  
in Toluene**

(Contd. of page 2)

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



- **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: 108-88-3 | Toluene          | 99.31% |
| CAS: 108-31-6 | maleic anhydride | 0.69%  |

### 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:**  
Supply fresh air and to be sure call for a doctor.  
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.
- **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

(Contd. on page 4)

# Safety Data Sheet

acc. to OSHA HCS

Printing date 05/23/2024

Reviewed on 05/23/2024

**Trade name: Maleic Anhydride 0.6% w/v  
in Toluene**

(Contd. of page 3)

- **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.
- **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 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: 108-88-3 | Toluene          | 67 ppm  |
| CAS: 108-31-6 | maleic anhydride | 0.2 ppm |

- **PAC-2:**

|               |                  |         |
|---------------|------------------|---------|
| CAS: 108-88-3 | Toluene          | 560 ppm |
| CAS: 108-31-6 | maleic anhydride | 2 ppm   |

- **PAC-3:**

|               |                  |           |
|---------------|------------------|-----------|
| CAS: 108-88-3 | Toluene          | 3700* ppm |
| CAS: 108-31-6 | maleic anhydride | 20 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.
- **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.

(Contd. on page 5)

# Safety Data Sheet

acc. to OSHA HCS

Printing date 05/23/2024

Reviewed on 05/23/2024

**Trade name: Maleic Anhydride 0.6% w/v  
in Toluene**

(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 section 7.

· **Control parameters**

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

### CAS: 108-88-3 Toluene

|     |   |
|-----|---|
| PEL | Long-term value: 200 ppm<br>Ceiling limit value: 300; 500* ppm<br>*10-min peak per 8-hr shift         |
| REL | Short-term value: 560 mg/m <sup>3</sup> , 150 ppm<br>Long-term value: 375 mg/m <sup>3</sup> , 100 ppm |
| TLV | Long-term value: 20 ppm<br>BEI, OTO, A4   |

### CAS: 108-31-6 maleic anhydride

|     |  |
|-----|--|
| PEL | Long-term value: 1 mg/m <sup>3</sup> , 0.25 ppm                                    |
| REL | Long-term value: 1 mg/m <sup>3</sup> , 0.25 ppm                                    |
| TLV | Long-term value: 0.01* mg/m <sup>3</sup><br>DSEN, RSEN; *inh. fraction + vapor, A4 |

· **Ingredients with biological limit values:**

### CAS: 108-88-3 Toluene

|     |   |
|-----|---|
| BEI | 0.02 mg/L<br>LD50 Intraperitoneal: blood<br>Time: prior to last shift of workweek<br>LD50: Toluene                      |
|     | 0.03 mg/L<br>LD50 Intraperitoneal: urine<br>Time: end of shift<br>LD50: Toluene   |
|     | 0.3 mg/g creatinine<br>LD50 Intraperitoneal: urine<br>Time: end of shift<br>LD50: o-Cresol with hydrolysis (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 skin.
- Avoid contact with the eyes and skin.

(Contd. on page 6)

# Safety Data Sheet

acc. to OSHA HCS

Printing date 05/23/2024

Reviewed on 05/23/2024

**Trade name: Maleic Anhydride 0.6% w/v  
in Toluene**

(Contd. of page 5)

- **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

## 9 Physical and chemical properties

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

- **General Information**

- **Appearance:**

|                        |                 |
|------------------------|-----------------|
| <b>Form:</b>           | Liquid          |
| <b>Color:</b>          | Clear           |
| <b>Odor:</b>           | Toluene         |
| <b>Odor threshold:</b> | Not determined. |

- **pH-value:** Not determined.

- **Change in condition**

|                                     |                  |
|-------------------------------------|------------------|
| <b>Melting point/Melting range:</b> | -95 °C (-139 °F) |
| <b>Boiling point/Boiling range:</b> | 110 °C (230 °F)  |

- **Flash point:** 4 °C (39.2 °F)

- **Flammability (solid, gaseous):** Highly flammable.

- **Auto igniting:** 535 °C (995 °F)

- **Decomposition temperature:** Not determined.

- **Ignition temperature:** Product is not selfigniting.

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

(Contd. on page 7)

# Safety Data Sheet

acc. to OSHA HCS

Printing date 05/23/2024

Reviewed on 05/23/2024

**Trade name: Maleic Anhydride 0.6% w/v  
in Toluene**

(Contd. of page 6)

|   |                         |
|---|-------------------------|
| · <b>Explosion limits:</b>  |                         |
| <b>Lower:</b>   | 1.2 Vol %               |
| <b>Upper:</b>   | 7 Vol %                 |
| · <b>Vapor pressure at 20 °C (68 °F):</b> 29 hPa (21.8 mm Hg)                 |                         |
| · <b>Vapor pressure at 50 °C (122 °F):</b> 124 hPa (93 mm Hg)                 |                         |
| · <b>Density at 20 °C (68 °F):</b> 0.87106 g/cm <sup>3</sup> (7.269 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 15 °C (59 °F):</b> 0.5 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>  | 99.3 %                  |
| <b>VOC content:</b>   | 99.31 %                 |
|   | 865.0 g/l / 7.22 lb/gal |
| · <b>Solids content:</b> 0.7 %  |                         |
| · <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:**
- **Primary irritant effect:**
- **on the skin:** Irritant to skin and mucous membranes.
- **on the eye:** No irritating effect.
- **Sensitization:**
- Sensitization possible through inhalation.
- Sensitization possible through skin contact.
- **Additional toxicological information:**
- The product shows the following dangers according to internally approved calculation methods for preparations:  
Harmful

(Contd. on page 8)

# Safety Data Sheet

acc. to OSHA HCS

Printing date 05/23/2024

Reviewed on 05/23/2024

**Trade name: Maleic Anhydride 0.6% w/v  
in Toluene**

(Contd. of page 7)

Irritant

· **Carcinogenic categories**

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

CAS: 108-88-3 Toluene

3

· **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**

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

· **IMDG, IATA**

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

(Contd. on page 9)



# Safety Data Sheet

acc. to OSHA HCS

Printing date 05/23/2024

Reviewed on 05/23/2024

**Trade name: Maleic Anhydride 0.6% w/v  
in Toluene**

(Contd. of page 8)

· **Transport hazard class(es)**

· **DOT**



· **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  
 · **Hazard identification number (Kemler code):** 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

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

## 15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**  
 No further relevant information available.  
 · **Sara**

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

None of the ingredients is listed.

(Contd. on page 10)

# Safety Data Sheet

acc. to OSHA HCS

Printing date 05/23/2024

Reviewed on 05/23/2024

**Trade name: Maleic Anhydride 0.6% w/v  
in Toluene**

(Contd. of page 9)

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

All ingredients are listed.

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

Toluene

ACTIVE

maleic anhydride

ACTIVE

· **Hazardous Air Pollutants**

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:**

CAS: 108-88-3 | Toluene

· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**

CAS: 108-88-3 | Toluene

II

· **TLV (Threshold Limit Value)**

All components have the value 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

GHS08

· **Signal word** Danger

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

Toluene

maleic anhydride

· **Hazard statements**

Highly flammable liquid and vapor.

Causes skin irritation.

May cause allergy or asthma symptoms or breathing difficulties if inhaled.

May cause an allergic skin reaction.

Suspected of damaging fertility or the unborn child.

May cause drowsiness or dizziness.

May cause damage to organs through prolonged or repeated exposure.

May be fatal if swallowed and enters airways.

· **Precautionary statements**

Obtain special instructions before use.

(Contd. on page 11)

# Safety Data Sheet

acc. to OSHA HCS

Printing date 05/23/2024

Reviewed on 05/23/2024

**Trade name: Maleic Anhydride 0.6% w/v  
in Toluene**

(Contd. of page 10)

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.  
 Use only outdoors or in a well-ventilated area.  
 Contaminated work clothing must not be allowed out of the workplace.  
 Wear protective gloves/protective clothing/eye protection/face protection.  
 [In case of inadequate ventilation] wear respiratory 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 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 or rash occurs: Get medical advice/attention.  
 If experiencing respiratory symptoms: Call a poison center/doctor.  
 Wash contaminated clothing before reuse.  
 In case of fire: Use CO<sub>2</sub>, 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.  
 • **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 1.2, 05/23/2024: Reviewed SDS for accuracy. MH/STN

Revision 0.0, 10-31-2016: Creation date for SDS. STN

05/23/2024

• **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)

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

NIOSH: National Institute for Occupational Safety

(Contd. on page 12)

# Safety Data Sheet

acc. to OSHA HCS

Printing date 05/23/2024

Reviewed on 05/23/2024

**Trade name: Maleic Anhydride 0.6% w/v  
in Toluene**

(Contd. of page 11)

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

Sensitization - Respiratory 1: Respiratory sensitisation – Category 1

Sensitization - Skin 1: Skin sensitisation – Category 1

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 2: Specific target organ toxicity (repeated exposure) – Category 2

Aspiration Hazard 1: Aspiration hazard – Category 1

· **\* Data compared to the previous version altered.**

US