



## SAFETY DATA SHEET

(according to (EC) 1907/2006)

### SECTION 1: Identification of the substance/mixture and of the company/undertaking

#### 1.1. Product identifier **Maleic Acid Solution**

**Synonyms:** cis-1,4-Butanedioic Acid (Z)-1,4-Butanedioic Acid (Z)-2-Butenedioic Acid

#### 1.2. Relevant identified uses of the substance or mixture and uses advised against

Used as an additive in cleaning products. Various other uses.

#### 1.3. Details of the supplier of the safety data sheet

**Manufacturer Information:** Vertellus Health & Specialty  
Products LLC, P.O. Box 730,  
Delaware Water Gap, PA 18327  
USA

**Non-Emergency Fax Number:** 570-421-9012  
**E-Mail Address:** msds@vertellus.com

**Non-Emergency Phone Number:** 800-344-3426

#### 1.4. Emergency telephone number

Vertellus: 800-344-3426  
CHEMTREC (USA): (800) 424-9300  
(collect calls accepted); (Int'l): (703) 527-3887  
(collect calls accepted; 011 prefix not needed)

### SECTION 2: Hazards identification

HMIS Rating	
HEALTH	3
FLAMMABILITY	1
REACTIVITY	1

#### 2.1. Classification of the substance or mixture

**(According to Regulation (EC) No 1272/2008)**

Specific Target Organ Systemic Toxicity Single Exposure Category 3  
Skin Sensitization Category 1  
Serious Eye Damage/Eye Irritation Category 1  
Skin Corrosion/Irritation Category 1C  
Acute Toxicity Dermal Category 4  
Acute Toxicity Oral Category 4  
Acute Toxicity Inhalation Dust / Mist Category 3

**Signal Word:**  
Danger

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### Hazard Precautions:

- H335 - May cause respiratory irritation.
- H317 - May cause an allergic skin reaction.
- H318 - Causes serious eye damage.
- H314 - Causes severe skin burns and eye damage.
- H302+H312 - Harmful if swallowed or in contact with skin.
- H331 - Toxic if inhaled.

### 2.2. Label elements

#### Hazard Symbols (Pictogram):



### Prevention Precautions:

- P272 - Contaminated work clothing should not be allowed out of the workplace.
- P260 - Do not breathe dust/fume/gas/mist/vapours/spray.
- P280 - Wear protective gloves/protective clothing/eye protection/face protection.
- P270 - Do not eat, drink or smoke when using this product.
- P264 - Wash hands thoroughly after handling.
- P271 - Use only outdoors or in a well-ventilated area.
- P261 - Avoid breathing dust/fume/gas/mist/vapours/spray.

### First Aid Precautions:

- P333+P313 - If skin irritation or rash occurs: Get medical advice/attention.
- P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P310 - Immediately call a POISON CENTER or doctor/physician.
- P303+P361+P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
- P301+P330+P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
- P363 - Wash contaminated clothing before reuse.
- P322 - Specific measures (see supplemental information on this label).
- P312 - Call a POISON CENTER or doctor/physician if you feel unwell.
- P302+P352 - IF ON SKIN: Wash with plenty of soap and water.
- P330 - Rinse mouth.
- P301+P312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
- P321 - Specific treatment (see supplemental information on this label).
- P304+P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

### Storage Precautions:

- P405 - Store locked up.
- P403+P233 - Store in a well-ventilated place. Keep container tightly closed.

### Disposal Precautions:



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P501 - Dispose of contents/container in accordance with local/regional/national/international regulation for hazardous wastes.

**Single Exposure Target Organs:**

Not applicable

**Repeated Exposure Target Organs:**

Not applicable

**(According to Directive 67/548/EEC)**

**Symbol:** C, Xi, Xn

**Risk Phrases:** R22: Harmful if swallowed.  
R35: Causes severe burns.  
R36/37/38: Irritating to eyes, respiratory system and skin.  
R43: May cause sensitisation by skin contact.

**Safety Phrases:** S2: Keep out of reach of children.  
S24: Avoid contact with the skin.  
S25: Avoid contact with the eyes.  
S28: After contact with skin, wash immediately with plenty of soap and water.  
S36/37/39: Wear suitable protective clothing, gloves and eye/face protection.  
S46: If swallowed, seek medical advice immediately and show this container or label.

### 2.3. Other hazards

**Signs and Symptoms of Potential Overexposure:** Mists/aerosols cause irritation, coughing or difficult breathing. Causes skin irritation and burns, including redness, itching and pain. Causes severe eye irritation and burns, including tearing, redness and pain. May cause corneal damage or conjunctivitis.

**Primary Route(s) of Exposure:** Skin contact, Eye contact. Inhalation. Ingestion.

**Medical Conditions Aggravated by Exposure:** Not available.

## SECTION 3: Composition/information on ingredients

### 3.1. Substances or 3.2. Mixtures

Ingredient	CAS Number	Concentration (%)	EINECS / ELINCS	EU Symbol	Risk Phrases
Water	7732-18-5	40 - 75	231-791-2	N/A	Not applicable
Maleic Acid	110-16-7	25 - 60	203-742-5	Xn, Xi, C	R22- R36/37/38- R43- R34

**NOTE:** See Section 8 of this MSDS for exposure limit data for these ingredients.  
See Section 15 of this MSDS for trade secret information (where applicable).  
See Section 16 of this MSDS for the full text of the R-phrases above.

## SECTION 4: First aid measures

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### 4.1. Description of first aid measures

- Skin Contact:** Immediately flush with water for 15 minutes. Wash the contaminated skin with soap and water. If irritation develops, call a physician. Remove contaminated clothing and continue flushing with water. Get medical attention if irritation develops or persists. Thoroughly wash or discard clothing and shoes before reuse.
- Eye Contact:** Rinse eyes immediately with large amounts of water for at least 15 minutes, occasionally lifting the eyelids. GET MEDICAL ATTENTION.
- Inhalation:**
- Ingestion:** GET MEDICAL ATTENTION. Do not give anything by mouth to an unconscious person.

### 4.2. Most important symptoms and effects, both acute and delayed

- Acute:** Mists/aerosols cause irritation, coughing or difficult breathing. Causes skin irritation and burns, including redness, itching and pain. Causes severe eye irritation and burns, including tearing, redness and pain. May cause corneal damage or conjunctivitis.
- Delayed Effects:** None known.

### 4.3. Indication of any immediate medical attention and special treatment needed

- Thermal Exposure:** Not applicable.
- Note to Physician:** No additional first aid information available

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

- Appropriate Extinguishing Media:** Carbon dioxide Dry chemical Alcohol foam

### 5.2. Special hazards arising from the substance or mixture

- Hazardous Products of Combustion:** As with other organic materials, combustion will produce carbon monoxide and carbon dioxide.
- Potential for Dust Explosion:** Not applicable.
- Special Flammability Hazards:** Can burn in fire releasing toxic vapors.

### 5.3. Advice for firefighters

- Basic Fire Fighting Guidance:** Evacuate area and fight fire from a safe distance. As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.
- Flammability Classification (OSHA):** Not applicable.

NFPA Rating



## SECTION 6: Accidental release measures



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### 6.1. Personal precautions, protective equipment and emergency procedures

**Evacuation Procedures:** Isolate the hazard area and deny entry to unnecessary and unprotected personnel.

**Special Instructions:** Remove all contaminated clothing to prevent further absorption. Decontaminate affected personnel using the first aid procedures in Section 4. Leather shoes that have been saturated must be discarded.

### 6.2. Environmental precautions

Prevent releases to soils, drains, sewers, and waterways.

### 6.3. Methods and material for containment and cleaning up

**Containment Techniques and Clean-up Procedures:** For small spills, use suitable absorbent material and collect for later disposal. LARGE SPILLS: Shut off leak if safe to do so. Carefully scoop up and place into appropriate disposal container. Scrub area with detergent and water. Prevent skin/eye contact.

**Special Reporting Requirements:** Notify appropriate authorities if required by regulation. See Section 15 for additional information.

### 6.4. Reference to other sections

Refer to section 8 for information on selecting personal protective equipment. Refer to section 13 for information on spilled product, absorbent and clean up material disposal instructions.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

**Precautions for Unique Hazards:** Not applicable.

**Practices to Minimize Risk:** Wear appropriate protective equipment when performing maintenance on contaminated equipment. Wash hands thoroughly before eating or smoking after handling this material.

**Special Handling Equipment:** Not applicable.

### 7.2. Conditions for safe storage, including any incompatibilities

**Storage Precautions & Recommendations:** Keep container closed when not in use.

**Dangerous Incompatibility Reactions:** Strong alkalis and oxidizing agents.

**Incompatibilities with Materials of Construction:** none known

### 7.3. Specific end use(s)

If a chemical safety assessment has been completed an exposure scenario is attached as an annex to this Safety Data Sheet. Refer to this annex for the specific exposure scenario control parameters for uses identified in subsection 1.2.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

**Exposure Limits (United States):** OSHA PEL: Not established. ACGIH TLV: Not established.

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### 8.2. Exposure controls

Also see the annex to this SDS (if applicable) for specific exposure scenario controls.

<b>Personal Protective Equipment:</b>	Wear chemical protective gloves, coveralls and boots. Wear chemical safety goggles. Wear a face-shield in settings where splashing is likely or where mists or dusts are present.
<b>Respirator Caution:</b>	Observe OSHA regulations for respirator use (29 CFR 1910.134). Air-purifying respirators must not be used in oxygen-deficient atmospheres.
<b>Ventilation:</b>	All operations should be conducted in well-ventilated conditions. Local exhaust ventilation should be provided.
<b>Other Engineering Controls:</b>	All appropriate engineering controls should be used to minimize exposure potential. Use exhaust ventilation to keep airborne concentrations below exposure limits.
<b>Thermal Hazards:</b>	Not applicable.
<b>Additive or Synergistic Effects:</b>	None known.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

<b>Appearance, State &amp; Odor (ambient temperature):</b>	Liquid with a slight odor.		
<b>Molecular Formula:</b>	C <sub>4</sub> H <sub>4</sub> O <sub>4</sub> (Maleic Acid)	<b>Molecular Weight:</b>	116.00
<b>Vapor Pressure:</b>	0.076	<b>Evaporation Rate:</b>	Not applicable
<b>Specific Gravity or Density:</b>	1.2	<b>Vapor Density (air = 1):</b>	Not available.
<b>Boiling Point:</b>	Not applicable	<b>Freezing / Melting Point:</b>	130 °C
<b>Solubility in Water:</b>	Soluble	<b>Octanol / Water Coefficient:</b>	Not available.
<b>pH:</b>	< 1	<b>Odor Threshold:</b>	N
<b>Viscosity:</b>	Not available.	<b>Autoignition Temperature:</b>	Not available.
<b>Flash Point and Method:</b>	Not determined (Not determined) ( )	<b>Flammable Limits:</b>	Not determined. (LEL) – Not determined. (UEL)

### 9.2. Other information

Not applicable.

## SECTION 10: Stability and reactivity

<b>10.1. Reactivity</b>	Not classified as dangerously reactive.
<b>10.2. Chemical stability</b>	Stable
<b>10.3. Possibility of hazardous reactions</b>	Polymerization is not expected to occur
<b>10.4. Conditions to avoid</b>	Incompatibles.
<b>10.5. Incompatible materials</b>	Strong alkalis and oxidizing agents.
<b>10.6. Hazardous decomposition</b>	Products of incomplete combustion may include CO, CO <sub>2</sub> and dense smoke.

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products

### SECTION 11: Toxicological information

**11.1. Information on toxicological effects**

<b>Acute Oral LD<sub>50</sub>:</b>	Oral LD50 (rat) = 708 mg/kg
<b>Acute Dermal LD<sub>50</sub>:</b>	Dermal LD50 (rabbit) = 1560 mg/kg
<b>Acute Inhalation LC<sub>50</sub>:</b>	Inhalation LC50 (rat) > 720 mg/m <sup>3</sup>
<b>Skin Irritation:</b>	Mildly irritating to skin.
<b>Skin Sensitization:</b>	No data available.
<b>Eye Irritation:</b>	Severely irritating to eyes.
<b>Target Organs:</b>	Kidneys
<b>Carcinogenicity:</b>	No data available.
<b>Teratogenicity:</b>	No data available.
<b>Reproduction:</b>	No data available.
<b>Neurotoxicity:</b>	No data available.
<b>Mutagenicity:</b>	No data available.

### SECTION 12: Ecological information

<b><u>12.1. Toxicity</u></b>	N MOSQUITO FISH = 204 ppm
<b><u>12.2. Persistence and degradability</u></b>	No data No data available.
<b><u>12.3. Bioaccumulative potential</u></b>	No data
<b><u>12.4. Mobility in soil</u></b>	No data
<b><u>12.5. Results of PBT and vPvB assessment</u></b>	Not available.
<b><u>12.6. Other adverse effects</u></b>	No data available. Not available.

### SECTION 13: Disposal considerations

**13.1. Waste treatment methods**

<b>US EPA Waste Number:</b>	D001
<b>Waste Classification: (per US regulations)</b>	The waste is a characteristic hazardous waste. NOTE: Generator is responsible for proper waste characterization. State (USA) hazardous waste regulations may differ substantially from federal (USA) regulations.





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**Waste Disposal:** Dispose of this material in accordance with standard practice for disposal of potentially hazardous materials as required by applicable international, national, regional, state or local laws. Do NOT dump into any sewers, on the ground, or into any body of water. For disposal within the EC, the appropriate code according to the European Waste Catalogue (EWC) should be used. Note that disposal regulations may also apply to empty containers and equipment rinsates.

### SECTION 14: Transport information

<b>14.1. UN number</b>	UN3265
<b>14.2. UN proper shipping name</b>	Corrosive liquid, acidic, organic, n.o.s. (Maleic Acid)
<b>14.3. Transport hazard class(es)</b>	8
<b>14.4. Packing group</b>	PG III
<b>14.5. Environmental hazards</b>	Not applicable
<b>14.6. Special precautions for user</b>	Not available.
NA Emergency Guidebook Numbers: 153	<b>IMDG EMS:</b> S-B F-A
<b>14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</b>	Not applicable.

### SECTION 15: Regulatory information

#### 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

<b>OSHA Hazards:</b>	Corrosive. Irritant. Not applicable.
<b>WHMIS Classification:</b>	Class D, Division 2, Subdivision B: Irritant. Class E: Corrosive Material.
<b>Chemical Inventory Lists:</b>	<b>Status</b>
TSCA:	Present
EINECS:	231-791-2 203-742-5
Canada(DSL/NDSL):	DSL
Japan:	(2)-1110; (2)-1100
Korea:	KE-35400 KE-13657
Australia:	Present
New Zealand:	Present
China:	Present
Philippines:	Present
Switzerland:	G-6425
<b>New Zealand GHS Classification:</b>	Not classified by this country.
<b>Japan GHS Classification:</b>	Not classified by this country.





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<b>Korea (MOL) GHS Classification:</b>	Not classified by this country.
<b>Australia GHS Classification:</b>	Not classified by this country.
<b>Taiwan GHS Classification:</b>	Not classified by this country.
<b>Indonesia GHS Classification:</b>	Not classified by this country.
<b>SARA 313:</b>	Maleic Acid
<b>Reportable Quantities:</b>	5000 lbs (Maleic Acid)
<b>State Regulations:</b>	This product contains chemicals listed on the Massachusetts Substance List for Right-to-Know Law. This product contains chemicals listed on the New Jersey Department of Health Hazard Right-to-Know Program Hazardous Substance List. This product contains chemicals listed on the Pennsylvania Department of Labor and Industry Hazardous Substance List.
<b>Other Regulatory Listings:</b>	SARA 311/312 Hazardous

### 15.2. Chemical safety assessment

Not applicable.

## SECTION 16: Other information

<b>Full text of R phrases in Section 3:</b>	R22: Harmful if swallowed. R35: Causes severe burns. R36/37/38: Irritating to eyes, respiratory system and skin. R43: May cause sensitisation by skin contact.
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### Legend of abbreviations:

ACGIH = American Conference on Governmental Industrial Hygienists.  
CAS = Chemical Abstracts Service.  
CERCLA = Comprehensive Environmental, Response, Compensation and Liability Act (1990).  
CFR = Code of Federal Regulations.  
DSL/NDSL = Domestic Substances List/Non-Domestic Substances List.  
EC = European Community.  
EEC = European Economic Community.  
EINECS = European Inventory of Existing Commercial chemical Substances.  
ELINCS = European List of Notified Chemical Substances.  
EU = European Union.  
GHS = Globally Harmonized System.  
LC = Lethal concentration.  
LD = Lethal dose.  
MOL = Ministry of Labor.  
NEMA = National Emergency Management Agency.  
NFPA = National Fire Protection Association.  
NIOSH = National Institute of Occupational Safety and Health.  
NTP = National Toxicological Program.  
OSHA = Occupational Safety and Health Administration  
PEL = Permissible exposure limit.  
RQ = Reportable quantity.  
SARA = Superfund Amendments and Reauthorization Act of 1986.  
TLV = Threshold limit value.  
WHMIS = Workplace Hazardous Materials Information System.

**Precautionary Statement:** Please note that the information contained herein is furnished without warranty of any kind. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers.

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