



Safety Data Sheet

Maleic Acid

Section 1 - Chemical Product and Company Identification

MSDS Name: Maleic Acid

Synonyms: Toxilic acid, cis-Butenedioic acid

Company Identification:

Cymer, LLC
124 Cymer Lane
Decatur, TN 37322

For information, call: 423-334-2778

For CHEMTEL assistance, call: 1-888.255.3924

For International CHEMTEL assistance, call:+1.813.248.0573

Section 2 - Hazards Identification

Emergency Overview

OSHA Hazards

Harmful by ingestion, harmful by skin absorption, skin sensitizer, Irritant

GHS Classification

Acute toxicity, Oral (Category 4)

Acute toxicity, Dermal (Category 4)

Skin irritation (Category 2)

Serious eye damage (Category 1)

Skin sensitization (Category 1)

Specific target organ toxicity - single exposure (Category 3)

Acute aquatic toxicity (Category 2)

GHS Label elements, including precautionary statements

Pictogram	
Signal word	Danger

Hazard statement(s)

H302 + H312 Harmful if swallowed or in contact with skin

H315 Causes skin irritation.

H317 May cause an allergic skin reaction.

H318 Causes serious eye damage.

H335 May cause respiratory irritation.

H401 Toxic to aquatic life.

Precautionary statement(s)

P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray

P280 Wear protective gloves/ eye protection/ face protection.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes.

HMIS Classification

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Health hazard: 2

Flammability: 0

Physical hazards: 0

NFPA Rating

Health hazard: 2

Fire: 0

Reactivity Hazard: 0

Potential Health Effects

Inhalation May be harmful if inhaled. Causes respiratory tract irritation.

Skin Harmful if absorbed through skin. Causes skin irritation.

Eyes Causes eye irritation.

Ingestion Harmful if swallowed.

Section 3 - Composition, Information on Ingredients

Maleic Acid

Synonyms : Toxilic acid, cis-Butenedioic acid

Formula : C4H4O4

Molecular Weight : 116.07 g/mol

CAS#	Chemical Name	Percent	EINECS/ELINCS
110-16-7	Maleic Acid	80.0-100.0	203-742-5 / 607-095-00-3

Section 4 - First Aid Measures

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled

If breathed in, move person into fresh air. If not breathing give artificial respiration Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

Section 5 - Fire Fighting Measures

Conditions of flammability

Not flammable or combustible.

Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special protective equipment for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

Hazardous combustion products

Hazardous decomposition products formed under fire conditions. - Carbon oxides

Section 6 - Accidental Release Measures

Personal precautions

Use personal protective equipment. Avoid dust formation. Avoid breathing dust. Ensure adequate ventilation.

Environmental precautions

Do not let product enter drains.

Methods for cleaning up

Pick up and arrange disposal without creating dust. Keep in suitable, closed containers for disposal.

Section 7 - Handling and Storage

Precautions for safe handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols.

Provide appropriate exhaust ventilation at places where dust is formed.

Dust explosion class: St2, LEL: 2.7%(V)

Conditions for safe storage

Keep container tightly closed in a dry and well-ventilated place.

Keep in a dry place.

Section 8 - Exposure Controls, Personal Protection

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Maleic Acid	none listed	none listed	none listed

OSHA Vacated PELs: Maleic Acid: No OSHA Vacated PELs are listed for this chemical.

Personal protective equipment

Respiratory protection

For nuisance exposures use type P95 (US) or type P1 (EU EN 143) particle respirator. For higher level protection use type OV/AG/P99 (US) or type ABEK-P2 (EU EN 143) respirator cartridges. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye protection

Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection

Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Section 9 - Physical and Chemical Properties

Physical State: Powder

Appearance: White

Odor: no data available

Odor Threshold: no data available
pH: no data available
Vapor Pressure: Not available.
Vapor Density: Not available.
Ignition temperature: no data available
Auto ignition temperature: no data available
Lower explosion limit: 2.7 %(V)
Upper explosion limit: no data available
Flash point: Flash point 127 °C
Evaporation Rate: Not available.
Viscosity: Not available.
Boiling Point: 160 °C (320 °F)
Freezing/Melting Point: Melting point/range: 137 - 140 °C
Decomposition Temperature: Not available.
Solubility: 788 g/l at 20 °C
Specific Gravity/Density: 1.59 g/cm³ at 25 °C (77 °F)
Molecular Formula: C₄H₄O₄
Molecular Weight: 116.07 g/mol

Section 10 - Stability and Reactivity

Chemical stability

Stable under recommended storage conditions

Possibility of hazardous conditions

Dust explosion class: St2, LEL: 2.7%(V)

Conditions to avoid

Dust

Materials to avoid

Oxidizing agents

Hazardous decomposition products

Hazardous decomposition products formed under fire - Carbon oxides

Section 11 - Toxicological Information

Acute toxicity

Oral LD50

LD50 Oral - rat - 708 mg/kg

Remarks: Behavioral: Convulsions or effect on seizure threshold. Behavioral: Muscle weakness.

Gastrointestinal: Ulceration or bleeding from stomach.

Inhalation LC50

LC50 Inhalation - rat - 1 h - > 720 mg/m³

Dermal LD50

LD50 Dermal - rabbit - 1,560 mg/kg

Remarks: Behavioral: Tremor.

Other information on acute toxicity

no data available

Skin corrosion/irritation

Skin - rabbit - Mild skin irritation - 24 h

Serious eye damage/eye irritation

Eyes - rabbit - Severe eye irritation

Respiratory or skin sensitization

no data available

May cause sensitization by skin contact

Germ cell mutagenicity

no data available

Carcinogenicity

IARC: No components of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No components of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No components of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No components of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity

No data available

Teratogenicity

No data available

Specific target organ toxicity - single exposure (Globally Harmonized System)

May cause respiratory irritation

Specific target organ toxicity - repeated exposure (Globally Harmonized System)

No data available

Aspiration hazard

no data available

Potential health effects

Inhalation May be harmful if inhaled. Causes respiratory tract irritation.

Ingestion Harmful if swallowed.

Skin Harmful if absorbed through skin. Causes skin irritation.

Eyes Causes eye irritation.

Signs and Symptoms of Exposure

Gastrointestinal disturbance

Synergistic effects

No data available

Additional Information

None

Section 12 - Ecological Information

Toxicity

Toxicity to fish

LC50 - Pimephales promelas (fathead minnow) - 5 mg/l - 96 h

LC0 - Lepomis macrochirus (Bluegill) - > 300 mg/l - 96 h

Toxicity to daphnia and other aquatic invertebrates

EC100 - Daphnia magna (Water flea) - 160 - 400 mg/l - 48 h

EC50 - Daphnia magna (Water flea) - 160 - 400 mg/l - 48 h

EC100 - Daphnia magna (Water flea) - 200 mg/l - 24 h

Toxicity to algae

EC50 - Desmodesmus subspicatus (green algae) - 41 mg/l - 72 h

Persistence and degradability

Bioaccumulative potential

Bioaccumulation *Leuciscus idus melanotus* - 3 d

Bioconcentration factor (BCF): < 10

Mobility in soil

No data available

PBT and vPvB assessment

No data available

Other adverse effects

No data available

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

Contaminated packaging

Dispose of as unused product.

Section 14 - Transport Information

DOT (US)

UN number: 3261 Class: 8 Packing group: III

Proper shipping name: CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S. (MALEIC ACID)

Reportable Quantity (RQ): 5000 lbs

Marine pollutant: Yes

Poison Inhalation Hazard: No

(see Section 15, Title 49: Transportation for bulk marine shipments)

IMDG

UN number: 3261 Class: 8 Packing group: III

Proper shipping name: CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S. (MALEIC ACID)

Reportable Quantity (RQ): 5000 lbs

Marine pollutant: Yes

Poison Inhalation Hazard: No

IATA

UN number: 3261 Class: 8 Packing group: III

Proper shipping name: CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S. (MALEIC ACID)

Reportable Quantity (RQ): 5000 lbs

Marine pollutant: Yes

Poison Inhalation Hazard: No

Section 15 - Regulatory Information

OSHA Hazards

Harmful by ingestion. Harmful by skin absorption. Skin sensitizer, Irritant

TSCA

CAS# 110-16-7 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b

SARA 302 Components

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components

SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards

Acute Health Hazard

Massachusetts Right To Know Components

Maleic acid CAS-No. 110-16-7 Revision Date 2007-03-01

Pennsylvania Right To Know Components

Maleic acid CAS-No. 110-16-7 Revision Date 2007-03-01

New Jersey Right To Know Components

Maleic acid CAS-No. 110-16-7 Revision Date 2007-03-01

California Prop. 65 Components

California No Significant Risk Level: None of the chemicals in this product are listed.

Title 49: Transportation Ammonium Benzoate is listed in 172.101 Appendix A (RQ 5000 pounds)

PART 171—GENERAL INFORMATION, REGULATIONS, AND DEFINITIONS

Subpart A—Applicability, General Requirements, and North American Shipments

§ 171.4 Marine pollutants.

(a) Except as provided in paragraph (c) of this section, no person may offer for transportation or transport a marine pollutant, as defined in §171.8, in intrastate or interstate commerce except in accordance with the requirements of this subchapter.

(b) The requirements of this subchapter for the transportation of marine pollutants are based on the provisions of Annex III of the 1973 International Convention for Prevention of Pollution from Ships, as modified by the Protocol of 1978 (MARPOL 73/78).

(c) Exceptions. Except when all or part of the transportation is by vessel, the requirements of this subchapter specific to marine pollutants do not apply to non-bulk packagings transported by motor vehicle, rail car or aircraft.

[Amdt. 171–116, 57 FR 52934, Nov. 5, 1993, as amended by Amdt. 107–39, 61 FR 51337, Oct. 1, 1996; 73 FR 4712, Jan. 28, 2008]

Hazardous substance for the purposes of this subchapter, means a material, including its mixtures and solutions, that—

- (1) Is listed in the appendix A to §172.101 of this subchapter;
- (2) Is in a quantity, in one package, which equals or exceeds the reportable quantity (RQ) listed in the appendix A to §172.101 of this subchapter

Section 16 - Additional Information

MSDS Creation Date: 7/29/2013

Revision Basic

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Cymer, LLC be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Cymer has been advised of the possibility of such damages.