

9-6-06  
MEM

Material Safety Data Sheet  
Maleic acid  
MSDS# 13550

Section 1 - Chemical Product and Company Identification

MSDS Name: Maleic acid  
Catalog Numbers: AC125230000, AC125230010, AC125230050, AC125231000, AC125235000, S80068, S80068-1, S93296, NC9306162, NC9320388, NC9335089, O3417-500, XXAC341750KG, XXO3417ST50KG  
Synonyms: cis-Butenedioic acid; cis-1,2-Ethylenedicarboxylic acid; Maleinic acid; Toxilic acid; (2Z)-2-Butenedioic acid.  
Company Identification: Fisher Scientific  
One Reagent Lane  
Fair Lawn, NJ 07410

For information in the US, call:  
201-796-7100  
Emergency Number US: 201-796-7100  
CHEMTREC Phone Number, US:  
800-424-9300

Section 2 - Composition, Information on Ingredients

CASH: 110-16-7  
Chemical Name: Maleic acid  
%: >98  
EINECS#: 203-742-5

Hazard Symbols: XN  
Risk Phrases: 22 36/37/38

Section 3 - Hazards Identification  
EMERGENCY OVERVIEW

Warning! May be harmful if swallowed or absorbed through the skin.  
Causes eye, skin, and respiratory tract irritation.  
Target Organs: Respiratory system, eyes, skin.  
Potential Health Effects

Eye: May result in corneal injury. Contact with eyes may cause severe irritation, and possible eye burns.

Skin: Contact with skin causes irritation and possible burns, especially if the skin is wet or moist. May cause dermatitis. May be harmful if absorbed through the skin.

Ingestion: May cause kidney damage. May be harmful if swallowed.

Inhalation: Causes respiratory tract irritation.

Chronic: Chronic exposure may cause kidney damage.  
Section 4 - First Aid Measures

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid. Do NOT allow victim to rub eyes or keep eyes closed.

Skin: Get medical aid. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Destroy contaminated shoes.

Ingestion: Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Get medical aid.

Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Notes to Physician: Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Dust from this material can form explosive organic dust cloud.

Extinguishing Media: Use water spray, dry chemical, carbon dioxide, or appropriate foam.  
Autoignition Temperature: Not applicable.  
Flash Point: Not applicable.  
Explosion Limits: Lower: Not available  
Explosion Limits: Upper: Not available  
NFPA Rating: health: 2; flammability: 1; instability: 1;  
Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal

container. Avoid generating dusty conditions. Provide ventilation.  
Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Use with adequate ventilation. Avoid breathing dust.

Storage: Keep container closed when not in use. Store in a cool, dry, well-ventilated area away from incompatible substances.  
Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

| Chemical Name | ACGIH       | NIOSH       | OSHA - Final PELs |
|---------------|-------------|-------------|-------------------|
| Maleic acid   | none listed | none listed | none listed       |

OSHA Vacated PELs: None listed  
Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.  
Section 9 - Physical and Chemical Properties

Physical State: Crystals  
Color: white  
Odor: faint, acidulous odor  
pH: 1.3 (10% aq soln)  
Vapor Pressure: 0.00004 mm Hg @ 25 deg C  
Vapor Density: Not applicable.  
Evaporation Rate: Negligible.  
Viscosity: Not available  
Boiling Point: Not available  
Freezing/Melting Point: 134-138 deg C  
Decomposition Temperature: Soluble  
Solubility in water: 1.59  
Specific Gravity/Density: C4H4O4  
Molecular Formula: 116.07  
Molecular Weight: Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.

Conditions to Avoid: Dust generation.

Incompatibilities with Other Materials: Strong oxidizing agents, strong reducing agents, strong bases.

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide.

Hazardous Polymerization: May occur.  
Section 11 - Toxicological Information

RTECS#: CAS# 110-16-7: OM9625000  
LD50/LC50:  
RTECS: CAS# 110-16-7: Draize test, rabbit, eye: 100 mg Severe; Draize test, rabbit, eye: 1 1/2 M Severe; Draize test, rabbit, skin: 500 mg/24H Mild; Inhalation, rat: LC50 = >720 mg/m3/1H; Oral, mouse: LD50 = 2400 mg/kg; Oral, rat: LD50 = 708 mg/kg; Skin, rabbit: LD50 = 1560 mg/kg; Carcinogenicity:

Maleic acid - Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No information found

Teratogenicity: No information found

Reproductive: No information found

Neurotoxicity: No information found

Mutagenicity: No information found

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No information found

Other:

See actual entry in RTECS for complete information.

Section 12 - Ecological Information

Ecotoxicity:

Fish: Fathead Minnow: LC50 = 5 mg/L; 96 Hr.; UnspecifiedFish;  
Mosquito Fish: LC50 = 240 mg/L; 24-48 Hr.; UnspecifiedDaphnia:  
Daphnia: 316.2 mg/l; 48h; EC50

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.

Section 14 - Transport Information

US DOT

Shipping Name: CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S. (MALEIC A  
Hazard Class: 8  
UN Number: UN3261  
Packing Group: III

Canada TDG

Shipping Name: CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S. (MALEIC A  
Hazard Class: 8  
UN Number: UN3261  
Packing Group: III

USA RQ: CAS# 110-16-7: 5000 lb final RQ; 2270 kg final RQ  
Section 15 - Regulatory Information

US Federal

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.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

CAS# 110-16-7: 5000 lb final RQ; 2270 kg final RQ

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

SARA Codes

CAS # 110-16-7: acute.

Section 313

No chemicals are reportable under Section 313.

Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depleters.

This material does not contain any Class 2 Ozone depleters.

Clean Water Act:

CAS# 110-16-7 is listed as a Hazardous Substance under the CWA.

None of the chemicals in this product are listed as Priority

Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants

under the CWA.

OSHA:

STATE

Maleic acid can be found on the following state right to know lists:

California, New Jersey, Pennsylvania, Massachusetts.

California Prop 65

California No Significant Risk Level:

None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: XN

Risk Phrases:

R 22 Harmful if swallowed.  
R 36/37/38 Irritating to eyes, respiratory system  
and skin.

Safety Phrases:

S 26 In case of contact with eyes, rinse immediately  
with plenty of water and seek medical advice.  
S 28A After contact with skin, wash immediately with  
plenty of water.  
S 37 Wear suitable gloves.

WGK (Water Danger/Protection)

CAS# 110-16-7: 1

Canada

CAS# 110-16-7 is listed on Canada's DSL List

Canadian WHMIS Classifications: D2B

This product has been classified in accordance with the hazard

criteria of the Controlled Products Regulations and the MSDS

contains all of the information required by those regulations.

CAS# 110-16-7 is listed on Canada's Ingredient Disclosure

List

3, 717

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Section 16 - Other Information

MSDS Creation Date:

6/03/1999

Revision #7 Date

10/24/2005

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 the company 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 the company has been advised of the possibility of such damages.