



Product Information (203) 740-3471 / Emergency Assistance CHEMTREC 1-800-424-9300

# MATERIAL SAFETY DATA SHEETS

## SECTION I

### PRODUCT AND COMPANY IDENTIFICATION

Product: Maleic Anhydride

This MSDS is valid for all grades and catalog #'s

Synonyms: cis-Butenedioic anhydride; 2,5-furandione;  
toxic anhydride

Formula: C<sub>4</sub>H<sub>2</sub>O<sub>3</sub>

Manufacturer: PHARMCO-AAPER

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CHEMTREC 1-800-424-9300

## SECTION II

### COMPOSITION / INFORMATION ON INGREDIENTS

% by Material CAS TLV/PEL LC50/LD50  
weight #

% by weight	Material	CAS #	TLV/PEL	LC50/LD50
100	Maleic Anhydride	108-31-6	0.25 ppm, 1mg/m <sup>3</sup> (TWA), 0.1 ppm (TWA)	N/A

## SECTION III

### HAZARDS IDENTIFICATION

**Inhalation:** Inhalation of dust or vapor may cause irritation of the nose and throat. Coughing, sneezing and burning of the throat may be experienced. Can cause allergic respiratory reactions.

**Ingestion:** Corrosive. Toxic. Swallowing can cause sore throat, abdominal pain, and vomiting. May cause burns to the digestive tract.

**Skin Contact:** Corrosive. May not cause immediate burning of the skin, but prolonged contact with moist skin cause reddening and blistering or burns.

**Eye Contact:** Corrosive. Dust or vapor cause burns or irritation of the eyes with swelling. Sensitivity to light and double vision may occur.

**Chronic Exposure:** Repeated inhalation may cause chronic bronchitis of the asthmatic type. Repeated skin contact may lead to dermatitis or sensitization.

**Aggravation of Pre-existing Conditions:** No information found.

## SECTION IV

### FIRST AID

Obtain medical attention for all cases of over-exposure.

**Eye Contact:** Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

**Skin Contact:** In case of contact, immediately flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Call a physician immediately.

**Ingestion:** Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person.

**Inhalation:** Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

## SECTION V

### FIRE FIGHTING MEASURES

**Fire:**

Auto-Ignition temperature: 477C (891F)

Flash point: CLOSED CUP: 102C (216F)

Flammable limits in air % by volume:

Lel: 1.4, uel: 7.1

**Explosion Hazards:** Above Flash Point, vapor-air mixtures are explosive within flammable limits noted above.

**Fire Extinguishing Media:** Alcohol foam, carbon dioxide. DO NOT USE dry chemical, multipurpose dry chemical, or loaded stream media because of explosion potential due to reactivity of basic compounds in these extinguishing media.

**Special Information:** In the event of a fire, wear full protective clothing and NIOSH- approved self-contained breathing apparatus with full facepiece operated in the pressure demand of other positive pressure mode.

## SECTION VI

### SPILL/ACCIDENTAL RELEASE MEASURES

Remove all sources of ignition. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8.

**Spills:** Clean up spills in a manner that does not disperse dust into the air. Use non-sparking tools and equipment. Reduce airborne dust and prevent scattering by moistening with water. Pick up spill for recovery or disposal and place

in a closed container. Evacuate area of all unnecessary personnel. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800)-424-8802.

#### SECTION VII

##### HANDLING AND STORAGE

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from incompatible substances. Do not reuse container. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warning and precautions listed for the product. Avoid dust formation and control ignition sources. Employ grounding, venting and explosion relief provisions in accord with accepted engineering practices in any process capable of generating dust and/or static electricity. Empty only into inert or non-flammable atmosphere. Emptying contents into a non-inert atmosphere where flammable vapors may be present could cause a flash fire or explosion due to electrostatic discharge.

#### SECTION VIII

##### EXPOSURE CONTROLS / PERSONAL PROTECTION

**Ventilation System:** A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

**Personal Respirators (NIOSH Approved):** If the exposure limit is exceeded, and engineering controls are not feasible, a full-face piece respirator with an organic vapor cartridge and particulate filter (NIOSH type N100 filter) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P particulate filter. For emergencies or instances where the exposure levels are not known, use a full-face piece positive-pressure, air-supplied respirator. **WARNING:** Air purifying respirators do not protect workers in oxygen-deficient atmospheres. Where respirators are required, you must have a written program covering the basic requirements in the OSHA respirator standard. These include training, fit testing, medical approval, cleaning, maintenance, cartridge change schedules, etc. See 29CFR1910.134 for details.

**Skin Protection:** Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

**Eye Protection:** Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

#### SECTION IX

##### PHYSICAL AND CHEMICAL PROPERTIES

**Physical State/Appearance:** White crystals.  
**Odor:** Sharp, irritating acrid odor.  
**pH (1% Solution in Water):** N/A  
**Boiling Point:** 202C (396F)  
**Melting Point:** 53C (127F)  
**Specific Gravity:** 1.48  
**Vapor Pressure (mm Hg):** 0.16 @ 20C (68F)  
**Vapor Density (Air=1):** 3.38  
**Volatility:** Not available.  
**Evaporation Rate:** Not available.  
**Solubility:** 16.3g/100mL water @ 25C (77F); slowly hydrolyzes.

#### SECTION X

##### STABILITY/REACTIVITY INFORMATION

**Stability:** Stable under ordinary conditions of use and storage. Readily sublimes. Decomposes slowly with water forming maleic acid. When dissolved in water it is a strong acid. Molten product should be stored under 70C (158F).  
**Incompatibilities:** Incompatible with alkali metals, alkaline earth metals, amines >66C (150F). Reacts violently with bases. Contact with strong oxidizers may cause fires and explosions.  
**Hazardous Decomposition Products:** Carbon dioxide and carbon monoxide may form when heated to decomposition.  
**Hazardous Polymerization:** Will not occur.  
**Conditions to avoid:** Moisture, heat, flames, ignition sources and incompatibles.

#### SECTION XI

##### TOXICOLOGICAL INFORMATION

Oral rat LD50: 400mg/kg; Skin rabbit LD50: 2620mg/Kg  
Standard Draize rabbit, eye, 1%, severe Investigated as a tumorigen, mutagen, reproductive effector.

**Cancer Lists:** Maleic anhydride (108-31-6) is not a known or anticipated carcinogen.

#### SECTION XII

##### ECOLOGICAL INFORMATION

**Environmental Fate:** When released to the air, soil and water; maleic anhydride will probably hydrolyze to maleic acid and be processed as follows. When released into the soil, this material is expected to leach into groundwater. When released into the soil, this material is expected to readily biodegrade. When released into water, this material is expected to readily biodegrade. When released into water, this material is not expected to evaporate significantly. When released into the air, this material is expected to exist in the aerosol phase with a short half-life. When released into the air, this material is not expected to be subject to wet deposition. When released into the air, this material is expected to be degraded by reaction with ozone and photochemically produced hydroxyl radicals. This material is not expected to significantly bioaccumulate. This material has an estimated bioconcentration factor (BCF) of less than 100.

**Environmental Toxicity:** When released to soil and water; maleic anhydride will probably hydrolyze to maleic acid and be represented by the following data for maleic acid.

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**SECTION XIII  
DISPOSAL CONSIDERATIONS**

**Waste Disposal:** Recycle to process, if possible. Consult your local or regional authorities.

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**SECTION XIV  
TRANSPORTATION INFORMATION**

**DOT Classification:** DOT CLASS 8: Corrosive material.  
**UN:** Maleic Anhydride **UNNA:** 2215 **PG:** III  
**Special Provisions for Transport:** Not available.

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**SECTION XV  
REGULATORY INFORMATION**

**Federal and State Regulations:** Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires emergency planning based on Threshold Planning Quantities (TPQs) and release reporting based on Reportable Quantities (RQs) in 40 CFR 355 (used for SARA 302, 304, 311 and 312). Components present in this product at a level which could require reporting under the statute are: **NONE**

Pennsylvania Right-To-Know, Hazardous substance List, Hazardous Substances and Special hazardous Substances on the list must be identified when present in products. Components present in this product at a level which could require reporting under the statute are: **NONE**

Massachusetts Right-To-Know, Substance List (MSL) Hazardous Substances and Extraordinarily Hazardous Substances on the MSL must be identified when present in products. Components present in this product at a level which could require reporting under the statute are: **NONE**

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center of release of quantities of Hazardous Substances equal or greater than the reportable quantities (RQs) in 40 CFR 302.4. Components present in this product at a level which could require reporting under the statute are: **Maleic Anhydride (108-31-6), 5000**

The information contained herein is based on data considered to be accurate based on the material as packaged. However, no warranty is expressed regarding the accuracy of these data or the results to be obtained from the use thereof. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. It is the user's obligation to determine the conditions of safe use of the product. While this MSDS is based on technical data judged to be reliable, PHARMCO-AAPER assumes not responsibility for the completeness or accuracy of the information contained herein.