

MALEIC ANHYDRIDE

Material Safety Data Sheet

Mallinckrodt Chemical Inc.

P.O. Box 800

Paris, Kentucky 40362

Emergency Telephone Number
314-539-1600

Effective Date: 04-06-89 Supersedes 02-12-87

PRODUCT IDENTIFICATION:

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

Formula CAS No.: 108-31-6

Molecular Weight: 98.06

Hazardous Ingredients: Maleic Anhydride. Chemical Formula: C4H2O3

PRECAUTIONARY MEASURES

DANGER! CORROSIVE. CAUSES BURNS. DUST OR VAPORS ARE IRRITATING TO THE EYES, SKIN AND RESPIRATORY TRACT. MELTED MATERIAL CAUSES THERMAL BURNS.

Do not breathe dust or vapor.
Avoid contact with eyes, skin and clothing.
Keep container closed.
Use with adequate ventilation.
Wash thoroughly after handling.
Keep away from heat, sparks and flame.

EMERGENCY FIRST AID

In all cases call a physician immediately. If swallowed, induce vomiting immediately by giving two glasses of water and sticking finger down throat. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes.
SEE SECTION 5.

Physical Data

SECTION 1

Appearance: White crystals.

Odor: Sharp irritating acrid odor.

Solubility: Slight in water; slowly hydrolyzes.

Boiling Point: 202 C (345 F)

Vapor Density (Air=1): 3.38

Melting Point: 53 C (127 F)

Vapor Pressure (mm Hg): 0.16 @ 20 C

Specific Gravity: 1.298 @ 70 C

Evaporation Rate: No information
found.

NFPA Ratings: Health: 3 Flammability: 1 Reactivity: 1

Fire and Explosion

SECTION 2

Information-----
Fire:Flashpoint: 102 C (215 F) Autoignition
temperature: 477 C (870 F). Flammable limits in
air, % by volume: lel: 3.4%; uel: 7.1%

Explosion:

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 or other positive pressure mode.

Reactivity Data

SECTION 3

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 70 C (158 F)

Hazardous Decomposition Products:

Toxic gases and vapors may be released such as carbon monoxide.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Reacts violently with bases. Contact with strong oxidizers may cause fires and explosions. Contact with alkali metals, caustics, and amines may cause polymerization if temperature is greater than 66 C (150 F)

Leak/Spill Disposal Information

SECTION 4

Remove all sources of ignition. Ventilate area of leak or spill. Clean-up personnel may require protection from inhalation of dust. Spills: Clean up spills in a manner that does not disperse dust into the air. Use non-sparking tools. Pick up spill for recovery or disposal and place in a closed container. Disposal: Whatever cannot be saved for recovery may be burned in an approved incinerator or disposed in an approved waste facility. Reportable Quantity (RQ) (CWA/CERCLA) : 5000 lbs. Ensure compliance with local, state and federal regulations.

Health Hazard Information

SECTION 5

A. Exposure/Health Effects

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.

Skin Contact:

Corrosive. May not cause immediate burning of the skin, but prolonged contact with moist skin cause reddening and blistering.

Eye Contact:

Corrosive. Dust or vapor cause 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.

B. FIRST AID

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

Ingestion: If swallowed, induce vomiting immediately by giving two glasses of water and sticking finger down throat. Never give anything by mouth to an unconscious person. Call physician immediately.

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

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

C. TOXICITY (RTECS, 1986)

Oral rat LD50: 481 mg/Kg Skin rabbit LD50: 2620 mg/Kg Mutation reference cited
Irritation eye rabbit 1% severe

Occupational Control Measures SECTION 6

Airborne Exposure Limits: -OSHA Permissible Exposure Limit (PEL): 0.25 ppm (TWA)
-ACGIH Threshold Limit Value (TLV): 0.25 ppm (TWA)

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 TLV is exceeded, a dust/mist respirator with chemical goggles may be worn, in general, up to ten times the TLV. Consult respirator supplier for limitations. Alternatively, a supplied air full facepiece respirator or airlined hood may be worn.

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. Contact lenses should not be worn when working with this material.

Storage and Special Information SECTION 7

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.

Mallinckrodt provides the information contained herein in good faith but makes

no representation as to its comprehensiveness or accuracy. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. MALLINCKRODT MAKES NO REPRESENTATIONS, OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE INFORMATION SET FORTH HEREIN OR TO THE PRODUCT TO WHICH THE INFORMATION REFERS. ACCORDINGLY, MALLINCKRODT WILL NOT BE RESPONSIBLE FOR DAMAGES RESULTING FROM USE OF OR RELIANCE UPON THIS INFORMATION.

OR368

Addendum to Material Safety Data Sheet

REGULATORY STATUS

This Addendum Must Not Be
Detached from the MSDS
Identifies SARA 313 substance(s)

Any copying or redistribution of the MSDS
must include a copy of this addendum

Hazard Categories for SARA
Section 311/312 Reporting

Acute	Chronic	Fire	Pressure	Reactive
-----	-----	----	-----	-----
X	X			X

Product or Components of Product:	SARA EHS		SARA Sec. 313 Chemicals		CERCLA	RCRA
	Sec. 302 RQ	TPQ	Name List	Chemical Category	Sec.103 RQ lbs	Sec. 261.33
-----	---	---	----	-----	-----	-----
MALEIC ANHYDRIDE (108-31-6)	No	No	Yes	No	No	No

SARA Section 302 EHS RQ:
Reportable Quantity of Extremely Hazardous Substance, listed at 40 CFR 355.

SARA Section 302 EHS TPQ:
Threshold Planning Quantity of Extremely Hazardous substance. An asterisk (*) following a Threshold Planning Quantity signifies that if the material is a solid and has a particle size equal to or larger than 100 micrometers, the Threshold Planning Quantity = 10,000 LBS.

SARA Section 313 Chemicals:
Toxic Substances subject to annual release reporting requirements listed at 40 CFR 372.65.

CERCLA Sec. 103:
Comprehensive Environmental Response, Compensation and Liability Act (Superfund) Releases to air, land or water of these hazardous substances which exceed the Reportable Quantity (RQ) must be reported to the National Response Center, (800-424-8802); Listed at 40 CFR 302.4

RCRA:
Resource Conservation and Recovery Act. Commercial chemical product wastes designated as acute hazards and toxic under 40 CFR 261.33

OR368

MALEIC ANHYDRIDE