



SIGMA-ALDRICH

Material Safety Data Sheet

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Version 1.20

Section 1 - Product and Company Information

Product Name	MALEIC ANHYDRIDE, BRIQUETTES, 99%		
Product Number	M188		
Brand	Aldrich Chemical		
Company	Sigma-Aldrich		
Street Address	3050 Spruce Street		
City, State, Zip, Country	St. Louis, MO 63103 US		
Technical Phone:	314 771 5765	Emergency Phone:	414 273 3850 Ext.5996
Fax:	800 325 5052		

Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313
MALEIC ANHYDRIDE	108-31-6	Yes
Formula	C4H2O3	
Synonyms	Anhydrid kyseliny maleinove (Czech), cis-Butenedioic anhydride, 2,5-Furandione, Maleic acid anhydride, Maleic anhydride (ACGIH/OSHA), Maleinanhydrid (Czech), Toxicic anhydride, RCRA waste number U147	

Section 3 - Hazards Identification

Emergency Overview

Corrosive.
Harmful if swallowed. Causes burns. May cause sensitization by inhalation and skin contact.
Sternutator. Sensitizer.

HMIS Rating

Health: 3* Flammability: 1 Reactivity: 1

NFPA Rating

Health: 3 Flammability: 1 Reactivity: 1

*additional chronic hazards present. For additional information on toxicity, please refer to Section 11.

Section 4 - First Aid Measures

Oral Exposure

If swallowed, wash out mouth with water provided person is conscious. Call a physician immediately. Do not induce vomiting.

Inhalation Exposure

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

Dermal Exposure

In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

Eye Exposure

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

Section 5 - Fire Fighting Measures

Explosion Data

Dust Potential

This material, like most materials in powder form, is capable of creating a dust explosion.

Flash Point: 217.4 °F 103 °C

Explosion Limits: Lower: 1.4 % Upper: 7.1 %

Autoignition Temp: 477 °C

Extinguishing Media

Suitable

Carbon dioxide.

Unsuitable

Do not use dry chemical powder extinguisher on this material.

Firefighting

Protective Equipment

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

Specific Hazard(s)

Emits toxic fumes under fire conditions.

Section 6 - Accidental Release Measures

Procedure to be Followed in Case of Leak or Spill

Evacuate area.

Procedure(s) of Personal Precaution(s)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

Methods for Cleaning Up

Sweep up, place in a bag and hold for waste disposal. Ventilate area and wash spill site after material pickup is complete.

Section 7 - Handling and Storage

Handling

User Exposure

Do not breathe dust. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

Storage

Suitable

Keep tightly closed. Store in a cool dry place.

Special Requirements

May decompose on exposure to moist air or water

Section 8 - Exposure Controls / PPE

Engineering Controls

Safety shower and eye bath. Use only in a chemical fume hood.

Personal Protective Equipment

Respiratory

NIOSH/MSHA-approved respirator.

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Hand

Compatible chemical-resistant gloves.

Eye

Chemical safety goggles.

General Hygiene Measures

Wash contaminated clothing before reuse. Discard contaminated shoes. Wash thoroughly after handling.

Exposure Limits, RTECS

Country	Source	Type	Value	Remarks
USA	ACGIH	TWA	1.0 MG/M3 (0.25 PPM)	
USA	MSHA Standard-air	TWA	0.25 PPM (1 MG/M3)	
USA	OSHA.	PEL	8H TWA 0.25 PPM (1 MG/M3)	
New Zealand	OEL			check ACGIH TLV
USA	NIOSH	TWA	0.25 PPM	

Section 9 - Physical/Chemical Properties**Appearance**

Physical State	Color
Solid	White

Molecular Weight: 98.06 AMU

Property Value At Temperature or Pressure

pH	N/A	
BP/BP Range	202 °C	760 mmHg
MP/MP Range	52 °C	
Freezing Point	N/A	
Vapor Pressure	0.16 mmHg	20 °C
Vapor Density	3.4 g/l	
Saturated Vapor Conc.	N/A	
SG/Density	N/A	
Bulk Density	N/A	
Odor Threshold	N/A	
Volatile%	N/A	
VOC Content	N/A	
Water Content	N/A	
Solvent Content	N/A	
Evaporation Rate	N/A	
Viscosity	N/A	
Partition Coefficient	N/A	
Decomposition Temp.	N/A	
Flash Point °F	217.4 °F	
Flash Point °C	103 °C	
Explosion Limits	Lower: 1.4 % Upper: 7.1 %	
Autoignition Temp	477 °C	
Solubility	N/A	

Section 10 - Stability and Reactivity**Stability****Conditions of Instability**

May decompose on exposure to moist air or water

Materials to Avoid

Strong oxidizing agents, Strong acids, Strong bases, Strong reducing agents, Alkali metals, Amines.

Hazardous Decomposition Products**Hazardous Decomposition Products**

Carbon monoxide, Carbon dioxide.

Hazardous Polymerization**Hazardous Polymerization**

Will not occur.

Section 11 - Toxicological Information**Route of Exposure****Skin Contact**

Causes burns.

Skin Absorption

May be harmful if absorbed through the skin.

Eye Contact

Causes burns.

Inhalation

Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract. May be harmful if inhaled.

Ingestion

Harmful if swallowed.

Sensitization**Sensitization**

Prolonged or repeated exposure may cause allergic reactions in certain sensitive individuals.

Signs and Symptoms of Exposure

Inhalation may result in spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis, and pulmonary edema. Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting. Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Conditions Aggravated by Exposure

Causes sneezing. Do not inhale.

RTECS Number: ON3675000

Toxicity Data

Oral - Rat: 400 mg/kg (LD50)
Intraperitoneal - Rat: 97 MG/KG (LD50)
Oral - Mouse: 465 mg/kg (LD50)
Oral - Rabbit: 875 mg/kg (LD50)
Skin - Rabbit: 2,620 mg/kg (LD50)
Oral - Guinea pig: 390 mg/kg (LD50)
Skin - Guinea pig: > 20,000 mg/kg (LD50)

Irritation Data

Eyes - Rabbit: 1 %
Remarks: Severe irritation effect

Chronic Exposure Carcinogen

Rat - Subcutaneous: 1220 MG/KG 61W 1
Result: Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Tumorigenic: Tumors at site or application.

Chronic Exposure - Mutagen

Species	Dose	Cell Type	Mutation test
Hamster	230 MG/L	lung	Cytogenetic analysis

Chronic Exposure - Reproductive Hazard

<i>Species</i>	<i>Dose</i>	<i>Route of Application</i>	<i>Exposure Time</i>
Rat	4060 MG/KG	Oral	(MULTIGENERATION S)

Result: Effects on Newborn: Growth statistics (e.g., reduced weight gain).

Section 12 - Ecological Information

Section 13 - Disposal Considerations

Appropriate Method of Disposal of Substance or Preparation

Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations.

Section 14 - Transport Information

DOT

Proper Shipping Name: Maleic anhydride
UN#: 2215
Class: 8
Packing Group: Packing Group III
PIH: Not PIH

IATA

Proper Shipping Name: Maleic anhydride
IATA Number: 2215
Hazard Class: 8
Packing Group: III

Section 15 - Regulatory Information

US Classification and Label Text**Indication of Danger**

Corrosive.

Risk Statements

Harmful if swallowed. Causes burns. May cause sensitization by inhalation and skin contact.

Safety Statements

Do not breathe dust. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing, gloves, and eye/face protection. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

US Statements

Sternutator. Sensitizer.

United States Regulatory Information

SARA Listed: Yes

Deminimis: 1 %

Notes: This product is subject to SARA section 313 reporting requirements.

TSCA Inventory Item: Yes

Section 16 - Other Information

Warranty

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2001 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.