

**Material Safety Data Sheet**

acc. to OSHA and ANSI

Printing date 12/20/2007

Reviewed on 11/09/2007

**1 Identification of substance:****Product details:****Product name:** Maleic anhydride**Stock number:**

A12178

L03002

**Manufacturer/Supplier:**

Alfa Aesar, A Johnson Matthey Company

Johnson Matthey Catalog Company, Inc.

30 Bond Street

Ward Hill, MA 01835-8099

Emergency Phone: (978) 521-6300

CHEMTREC: (800) 424-9300

Web Site: www.alfa.com

**Information Department:** Health, Safety and Environmental Department**Emergency information:**

During normal hours the Health, Safety and Environmental Department.

After normal hours call Chemtrec at (800) 424-9300.

**2 Composition/Data on components:****Chemical characterization:****Description: (CAS#)**

Maleic anhydride (CAS# 108-31-6), 100%

**Identification number(s):****EINECS Number:** 203-571-6**EU Number:** 607-096-00-9**3 Hazards identification****Hazard description:**

C Corrosive

**Information pertaining to particular dangers for man and environment**

R 22 Harmful if swallowed.

R 34 Causes burns.

R 42/43 May cause sensitization by inhalation and skin contact.

**Classification system****HMIS ratings (scale 0-4)****(Hazardous Materials Identification System)**

HEALTH	2
FIRE	1
REACTIVITY	1

Health (acute effects) = 2

Flammability = 1

Reactivity = 1

**4 First aid measures****General information**

Immediately remove any clothing soiled by the product.

**After inhalation**

Supply fresh air and to be sure call for a doctor.

Supply fresh air. If required, provide artificial respiration. Keep patient warm.

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Seek immediate medical advice.

**After skin contact**

Immediately wash with water and soap and rinse thoroughly.

Seek immediate medical advice.

**After eye contact**

Rinse opened eye for several minutes under running water. Then consult a doctor.

**After swallowing** Seek immediate medical advice.**5 Fire fighting measures****Suitable extinguishing agents** Carbon dioxide**For safety reasons unsuitable extinguishing agents** Dry chemical**Special hazards caused by the material, its products of combustion or resulting gases:**

In case of fire, the following can be released:

Carbon monoxide and carbon dioxide

**Protective equipment:**

Wear self-contained respirator.

Wear fully protective impervious suit.

**6 Accidental release measures****Person-related safety precautions:**

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

**Measures for environmental protection:**

Do not allow material to be released to the environment without proper governmental permits.

**Measures for cleaning/collecting:**

Use neutralizing agent.

Dispose contaminated material as waste according to item 13.

Ensure adequate ventilation.

**Additional information:**

See Section 7 for information on safe handling

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

**7 Handling and storage****Handling****Information for safe handling:**

Keep container tightly sealed.

Store in cool, dry place in tightly closed containers.

Ensure good ventilation at the workplace.

Prevent formation of dust.

**Information about protection against explosions and fires:**

Dust can combine with air to form an explosive mixture.

**Storage****Requirements to be met by storerooms and receptacles:**

No special requirements.

**Information about storage in one common storage facility:**

Do not store together with oxidizing and acidic materials.

Do not store together with alkalis (caustic solutions).

Store away from reducing agents.

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Store away from water/moisture.

**Further information about storage conditions:**

Protect from humidity and water.

Keep container tightly sealed.

Store in cool, dry conditions in well sealed containers.

**8 Exposure controls and personal protection****Additional information about design of technical systems:**

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

**Components with limit values that require monitoring at the workplace:**

Maleic anhydride

	ppm
ACGIH TLV	0.25
Belgium TWA	0.25
Denmark TWA	0.2
Finland TWA	0.25; 0.75-STEL
France TWA	1-STEL
Germany TWA	0.1
Hungary TWA	0.25; 0.75-STEL
Ireland TWA	0.25
Netherlands TWA	0.1
Russia TWA	0.25-STEL
Sweden TWA	0.3; 0.6-STEL
Switzerland TWA	0.2; 0.4-STEL
United Kingdom TWA	0.25; 0.75-STEL (respiratory sensitizer)
USA PEL	0.25

**Components with limit values that require monitoring at the workplace:****Additional information:** No data**Personal protective equipment****General protective and hygienic measures**

The usual precautionary measures for handling chemicals should be followed.

Keep away from foodstuffs, beverages and feed.

Remove all soiled and contaminated clothing immediately.

Wash hands before breaks and at the end of work.

Avoid contact with the eyes and skin.

**Breathing equipment:**

Use suitable respirator when high concentrations are present.

**Protection of hands:** Impervious gloves**Eye protection:**

Safety glasses

Tightly sealed goggles

Full face protection

**Body protection:** Protective work clothing.**9 Physical and chemical properties:****General Information****Form:** Crystalline**Color:** White

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<b>Odor:</b>	Acrid
<b>Change in condition</b>	
<b>Melting point/Melting range:</b>	54-56°C (129-133°F)
<b>Boiling point/Boiling range:</b>	202°C (396°F)
<b>Sublimation temperature / start:</b>	Not determined
<b>Flash point:</b>	103°C (217°F)
<b>Ignition temperature:</b>	Not determined
<b>Decomposition temperature:</b>	Not determined
<b>Danger of explosion:</b>	Product does not present an explosion hazard.
<b>Explosion limits:</b>	
<b>Lower:</b>	1.4 Vol %
<b>Upper:</b>	7.1 Vol %
<b>Vapor pressure:</b>	Not determined
<b>Density at 20°C (68°F):</b>	1.43 g/cm <sup>3</sup>
<b>Solubility in / Miscibility with Water:</b>	Soluble

**10 Stability and reactivity****Thermal decomposition / conditions to be avoided:**

Decomposition will not occur if used and stored according to specifications.

**Materials to be avoided:**

Acids  
Oxidizing agents  
Bases  
Reducing agents  
Water/moisture  
Amines  
Alkali metals

**Dangerous reactions** No dangerous reactions known**Dangerous products of decomposition:** Carbon monoxide and carbon dioxide**11 Toxicological information****Acute toxicity:****LD/LC50 values that are relevant for classification:**

Oral	LD50	390 mg/kg (gpg)
		465 mg/kg (mus)
		400 mg/kg (rat)
		875 mg/kg (rbt)
Dermal	LD50	>20000 mg/kg (gpg)
		2620 mg/kg (rbt)
Irritation of eyes	severe	1 % (rbt)

**Primary irritant effect:****on the skin:**

Corrosive effect on skin and mucous membranes.

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Irritant to skin and mucous membranes.

**on the eye:**

Strong corrosive effect.

Irritating effect.

**Sensitization:**

Sensitization possible through inhalation.

Sensitization possible through skin contact.

**Other information (about experimental toxicology):**

Tumorigenic effects have been observed on tests with laboratory animals.

Reproductive effects have been observed on tests with laboratory animals.

Mutagenic effects have been observed on tests with laboratory animals.

**Subacute to chronic toxicity:**

Corrosive materials are acutely destructive to the respiratory tract, eyes, skin and digestive tract. Eye contact may result in permanent damage and complete vision loss. Inhalation may result in respiratory effects such as inflammation, edema, and chemical pneumonitis. May cause coughing, wheezing, laryngitis, shortness of breath, headache, nausea and vomiting. Ingestion may cause damage to the mouth, throat and esophagus.

May cause skin burns or irritation depending on the severity of the exposure.

Chronic exposure to maleic anhydride may cause increased incidence of bronchitis and asthma, dermatitis, chronic eye irritation and keratitis.

**Additional toxicological information:**

Swallowing will lead to a strong corrosive effect on mouth and throat and to the danger of perforation of esophagus and stomach.

To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

The Registry of Toxic Effects of Chemical Substances (RTECS) contains tumorigenic and/or carcinogenic and/or neoplastic data for components in this product.

No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

**12 Ecological information:****General notes:**

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

Do not allow material to be released to the environment without proper governmental permits.

**13 Disposal considerations****Product:****Recommendation**

Consult state, local or national regulations to ensure proper disposal.

**Uncleaned packagings:**

**Recommendation:** Disposal must be made according to official regulations.

**Recommended cleansing agent:** Water, if necessary with cleansing agents.

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## 14 Transport information

### DOT regulations:



**Hazard class:** 8  
**Identification number:** UN2215  
**Packing group:** III  
**Proper shipping name (technical name):** MALEIC ANHYDRIDE  
**Label:** 8

### Land transport ADR/RID (cross-border)



**ADR/RID class:** 8 (C4) Corrosive substances  
**Danger code (Kemler):** 80  
**UN-Number:** 2215  
**Packaging group:** III  
**Description of goods:** 2215 MALEIC ANHYDRIDE

### Maritime transport IMDG:



**IMDG Class:** 8  
**UN Number:** 2215  
**Label:** 8  
**Packaging group:** III  
**Proper shipping name:** MALEIC ANHYDRIDE

### Air transport ICAO-TI and IATA-DGR:



**ICAO/IATA Class:** 8  
**UN/ID Number:** 2215  
**Label:** 8  
**Packaging group:** III  
**Proper shipping name:** MALEIC ANHYDRIDE

## 15 Regulations

### Product related hazard informations:

#### Hazard symbols:

C Corrosive

#### Risk phrases:

22 Harmful if swallowed.  
 34 Causes burns.

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42/43 May cause sensitization by inhalation and skin contact.

**Safety phrases:**

- 22 Do not breathe dust.
- 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
- 45 In case of accident or if you feel unwell, seek medical advice immediately.

**National regulations**

All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.

**Information about limitation of use:**

For use only by technically qualified individuals.  
This substance is subject to a Significant New Use Rule (SNUR) promulgated under Section 5(a)(2) of the Toxic Substances Control Act (TSCA). See 40 CFR 721. This product is being sold for research and development use only for the significant new use listed.  
This product is subject to the reporting requirements of section 313 of the Emergency Planning and Community Right to Know Act of 1986 and 40CFR372.

**16 Other information:**

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

**Department issuing MSDS:** Health, Safety and Environmental Department.

**Contact:** Paul V. Connolly

USA