

**EXCEL CHEMICAL CORPORATION**

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**Maleic Anhydride  
Material Specification****4 · Material Safety Data Sheets****Section 1. Identification of substance**

Product Name : Maleic anhydride
Chemical Formula: C <sub>4</sub> H <sub>2</sub> O <sub>3</sub>
Synonyms : cis-Butenedioic anhydride; 2,5-furandione; toxilic anhydride
Manufacturer/Supplier : EXCEL CHEMICAL CORPORATION
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**Section 2. Hazards identification****Hazard Classification :****Signal Word : DANGER****Emergency overview:**

Danger! Causes eye damage and skin burns. Causes respiratory irritation. Causes gastrointestinal irritation. Heated material can cause thermal burns.

**Potential health effects:**

Eye contact: causes eye damage. Heated material can cause thermal burns.

Skin contact: causes skin burns. Heated material can cause thermal burns.

Inhalation: causes respiratory irritation. Ingestion: causes gastrointestinal irritation.

Hmis code: (health:3) (flammability:1) (reactivity:1)

Nfpa code: (health:3) (flammability:1) (reactivity:1)

**Section 3. Composition/information on ingredients**

Chemical Name : Malice anhydride
Synonyms : cis-Butenedioic anhydride; 2,5-furandione; toxilic anhydride
CAS NO.: 108-31-6
Range % by Wt.:100

**Section4. First Aid Measures**

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Ingestion: if swallowed, drink plenty of water. Induce vomiting only at the instructions of a physician. Get immediate medical attention.

Eye: immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

Skin: immediately wash exposed skin with soap and water. Remove contaminated clothing, including shoes, and thoroughly clean and dry before reuse. Get immediate medical attention.

Inhalation: if adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.

Notes to physician: Get immediate medical attention and send to hospital

**Section 5. Fire Fighting Measures**

Fire:

Flash point: 102C (216F) CC

Auto ignition temperature: 477C (891F)

Flammable limits in air % by volume: LEL: 1.4; UEL: 7.1

Extinguishing media:

agents approved for class a hazard (e.g., foam, steam) or water fog.

Unusual fire and explosion hazards:

none identified.

Fire-fighting equipment:

firefighters should wear full bunker gear, including a positive pressure self-contained breathing apparatus.

Precautions:

do not use dry chemical extinguishers.

Hazardous combustion products:

burning can produce carbon monoxide and/or carbon dioxide and other harmful products.

**Section 6. Accidental Release Measures**

Leak and Spill: Remove mechanically or contain on an absorbent material such as dry sand or earth.

**Maleic Anhydride  
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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 warnings 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 8. Exposure Controls, Personal Protection**

a. Exposure Limits: OSHA PEL: 0.25 ppm (1989)(1971)

ACGIH TLV-TWA: 0.25 ppm

b. Engineering measures: Control airborne concentrations below the exposure guidelines.

c. Personal protection:

Ingestion: do not swallow or drink.

Eye: do not get in eyes. Wear chemical goggles and face shield.

Skin: do not get on skin or clothing. Wear clothing, gloves and footwear that cannot be penetrated by chemicals or oil. Wear face shield.

Inhalation: Avoid breathing vapor or dust. Use with adequate ventilation. If ventilation is inadequate, use NIOSH certified respirator that will protect against organic vapor and dust/mist.

**Section 9. Physical /Chemical Properties**

Appearance: White Briquettes or Flakes	Odor: Sharp irritating acrid odor.
Flash point: 102°C (close cup)	Specific Gravity: 0.94 @20°C
pH: 2.42 (0.01M solution)	Melting Point: 58°C
Boiling Point: 202°C	Vapor Density (Air=1): 4.0
Vapor Pressure (mm Hg): 0.8-1.2 mmHg	Explosion Limit: 1.8-6.9%

**Section 10. Stability and Reactivity**

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Stability: stable.

Conditions to avoid: avoid exposure to water.

Materials to avoid: reacts exothermically with sodium and potassium and can produce a violent evolution of gas. Any steam, water or condensate that comes in contact with maleic anhydride must not contain more than 100 ppm of either metal. Reacts with water and evolves heat and acid.

Decomposition products: none identified.

Hazardous polymerization: will not occur.

**Section 11. Toxicological Information**

This product contains maleic anhydride. Direct contact with solid material causes eye damage. Exposure to vapors causes irritation, lachrymation, and blurred vision.

In a skin irritation/corrosivity study in rabbits, maleic anhydride caused redness 48 hours after exposure and visible destruction of skin 7 days after a 4-hour exposure.

Some of the test article adhered to the application site throughout the study. Maleic anhydride should be considered corrosive to skin. Repeated dermal application of Maleic anhydride to guinea pigs did not cause dermal sensitization.

Literature values for acute oral LD50s range from 485 mg/kg to 1050 mg/kg (rat). Maleic anhydride has an acute dermal LD50 of 2620 mg/kg (rabbit).

Inhalation of dust or vapor can cause pulmonary irritation, cough, and edema. Repeated exposure has been reported to cause chronic bronchitis.

Maleic anhydride was tested for potential respiratory sensitization in Sprague-Dawley rats. Animals were exposed to a particulate aerosol at a target concentration of 500 ug/m<sup>3</sup>, 6 hours/day for five days. Following a 3-week rest period, the exposed animals were challenged with 500 ug/m<sup>3</sup> maleic anhydride for 6 hours.

Maleic anhydride exposed and challenged rats had a slight, but significant increase in maleic anhydride specific serum IgG antibody compared to both the challenged and non-challenged controls.

Although serum antibody titers were elevated, other prominent features of respiratory sensitization reactions in the rat model such as increases in external hemorrhagic lung foci, increased lung weight and volume, and extensive lung pathology were not evident.

Based on this model, maleic anhydride is not expected to cause respiratory sensitization

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in humans.

Maleic anhydride was evaluated for toxicological and/or carcinogenic effects in male and female Fisher 344 rats following dietary administration at levels of 100, 32, 10 mg/kg/day. The Chemical Industry Institute of Toxicology sponsored the study. Maleic anhydride produced only marginal toxicity which was evident by small (less than 6%) but dose-related body weight decreases in male rats fed 100 and 32 mg/kg/day. Food consumption was also slightly reduced during limited periods of the study for animals in the two highest dose groups. The 10 mg/kg/day dose had no sustained significant effects on body weights. No distinct treatment related effects were seen in the clinical laboratory parameters or in the organ weight data. Gross and histopathologic evaluations revealed no lesions that were treatment related.

**Section 12. Ecological Information****Environmental Fate:**

When released to 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:**

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When released to soil and water; Maleic anhydride will probably hydrolyze to Maleic acid and be represented by the following data for Maleic acid.

TLm /Fathead minnow/5ppm/96 hr./fresh water

TLm/Mosquito fish/240 ppm/24-48 hr./fresh water

**Section 13. Disposal Considerations**

Discarded commercial product, off- specification species, container residues, and spill residues thereof are hazardous wastes (U147) due to toxicity. Wastewater may be treated by wet air oxidation, chemical or electrolytic oxidation, fluidized bed carbon absorption, or incineration in accordance with 40 CFR 268.42. Non- wastewater may be treated by fuel substitution or by incineration in accordance with 40 CFR 268.42. Do not landfill.

**Section 14. Transport Information**

R.O.C. Dept Of Transportation  
Shipping Name Maleic Anhydride  
Hazard Class 8(9)  
Identification Number UN2215  
Packing Group III  
RQ RQ

International information:  
Sea (IMO/IMDG)  
Shipping Name Maleic Anhydride  
Class 8(9)  
Packing Group III  
UN Number UN2215  
Air (ICAO/IATA)  
Shipping Name Maleic Anhydride  
Class 8  
Subsidiary Class 9  
Packing Group III

European Road/Rail (ADR/RID)  
Shipping Name Maleic Anhydride  
U.S. DEPT OF TRANSPORTATION

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**Section 15. Regulatory Information****Section 16. Additional Information**

Remark

"—"means no data , and "/" means not suitable.

※ ..... This information is only suitable for this product, and It does not suit that if this product is to be a additive agent or mixed with other chemicals.

※ ..... 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.