

**MATERIAL SAFETY1 DATA SHEET**

HAZARD RANKING	
4 SEVERE	
3 SERIOUS	
2 MODERATE	
1 SLIGHT	
0 MINIMAL	
NFPA 704	

**SECTION I. GENERAL INFORMATION**

Producer: Derivados Maleicos, S.A. de C.V.		Issued date:	August 29 <sup>th</sup> 2001
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		SETIQ (Mexico):	1-800-00-214-00
		CHEMTREC (USA):	1-800-424-9300
		CANUTEC (Canada):	(613)-996-6666

**SECTION II. CHEMICAL IDENTIFICATION**

Product Name: MALEIC ANHYDRIDE	Synonyms: 2,5- Furandione Toxic anhydride cis-Butenedioic anhydride Dihydro-2,5-dioxofuran
Chemical Name: Maleic anhydride	
Structural Formula: C <sub>2</sub> H <sub>2</sub> (CO) <sub>2</sub> O, (COCH) <sub>2</sub> O, C <sub>4</sub> H <sub>2</sub> O <sub>3</sub>	
Chemical Family: Unsaturated aliphatic carboxylic acid anhydride	

**SECTION III. IDENTIFICATION DATA**

CAS: 108-31-6	TLV-TWA: 0.25 ppm (1 mg/m <sup>3</sup> )	
UN: 2215	TLV-STEL: NA	IDLH: 10 mg/m <sup>3</sup>

**SECTION IV. PHYSICAL AND CHEMICAL PROPERTIES**

Boiling point: 760 mm Hg	202°C (396°F)	Relative density: @20°C (water=1)	1.48	Vapor Pressure: mm Hg @ 20°C	0.16
Melting point:	53°C (127°F)	pH: (0.01 M solution)	2.42	Evaporation rate: (BuAc=1)	< 1
Flash point: (closed cup)	102°C (215°F)	Molecular weight:	98.06	% Volatiles:	NA
Autoignition temperature:	477°C (890°F)	Solubility in water:	Complete 16.3 g/100	Vapor density: (air=1)	3.38
Appearance and odor: Colorless or white crystalline solid; irritating, acrid, choking odor.					
Flammable or Explosive Limits (% air):	Lower limit: 1.4%			Upper limits: 7.1%	

**SECTION V. FIRE FIGHTING MEASURES**

Extinguishing media:	Use water spray or fog, alcohol foam, polymer foam, or carbon dioxide. DO NOT USE dry chemical powder, these extinguishers contain sodium or potassium carbonates which react violently with maleic anhydride.
Personal protective equipment:	Wear full protective clothing (chemical splash suit) and positive pressure self-contained breathing apparatus.
Fire fighting instructions:	Water spray or fog carefully applied to surface of the burning material can be used to extinguish the fire. Use water spray to absorb heat, keep containers cool and protect fire-exposed materials. Use water spray to flush spills away from ignition sources.
Fire hazard comments:	Maleic Anhydride can burn if strongly heated. During fire, irritating/toxic gases and fumes may be generated. Can form explosive dust or moisture.
Combustion decomposition products:	Burning may produce carbon monoxide, carbon dioxide and acetylene. Incomplete combustion may also produce acrid smoke and irritating fumes.

**SECTION VI. STABILITY AND REACTIVITY**

Stable: Yes	Unstable: -----	Hazardous Polymerization: Does not occur
Incompatibility:	Reacts with water and forms maleic acid. With strong oxidizing agents (perchlorates, peroxides, chromates) and strong reducing agents (phosphorus, chloride) may react violently. Avoid alkali metals, alkalis, alkaline earth metals, alkaline earth hydroxides, amines, pyridine, quinoline, sodium or potassium carbonates, aqueous ammonia, or ammonium salts.	
Hazardous decomposition products:	Not available.	
Conditions to avoid:	Static charge, sparks, heat, other ignition sources, generation of dust and moisture.	

**SECTION VII. HAZARDS IDENTIFICATION**

**POTENTIAL HEALTH EFFECTS**

1. Inhalation:	Vapors, fumes or dust can cause severe irritation of the nose, throat, and respiratory tract. Symptoms of exposure may include coughing, sneezing, shortness of breath, nosebleeds and vomiting, depending on severity of exposure. High concentrations may cause a life-threatening accumulation of fluid in the lungs. Prolonged or repeated inhalation may cause chronic bronchitis.
2. Skin contact:	On moist skin, maleic anhydride forms maleic acid and can cause severe irritation or burns. It may be absorbed through the skin, but is not likely to cause toxic effects. Prolonged skin contact may cause dermatitis.
3. Eye contact:	Dust or concentrated solutions may cause severe irritation or corrosive injury. Vapors can produce redness, irritation blurred vision and burning sensation. Severe eye damage may result in blindness.
4. Ingestion:	Toxic by ingestion; can cause severe irritation of the mouth, throat, and digestive tract based in its corrosivity.

**FIRST AID MEASURES**

1. Inhalation:	Remove victim to fresh air. If breathing is difficult give medical oxygen. Get medical attention immediately.
2. Skin contact:	Immediately flush contaminated area with lukewarm, gently running water for at least 20-30 minutes. Under running water, remove contaminated clothing, shoes and leather goods. Get medical attention immediately.
3. Eye contact:	Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for at least 20-30 minutes, while holding the eyelid(s) open. Neutral saline solution may be used as soon as it is available. Get medical attention immediately.
4. Ingestion:	Never give anything by mouth if victim is rapidly losing consciousness, is unconscious or convulsing. DO NOT INDUCE VOMITING. Have victim drink two glasses of water to dilute material in the stomach. If milk is available, it may be administered AFTER the water has been given. If vomiting occurs naturally, have the victim lean forward to reduce risk of aspiration, rinse mouth and repeat administration of water. Get medical attention immediately.

**OTHER HAZARD INFORMATION**

Carcinogenicity: NA	Mutagenicity: NA	Teratogenicity: NA
LD <sub>50</sub> (oral, rats): 400 mg/kg	Over exposure effects: Can cause chronic dermatitis, and bronchitis.	
LC <sub>50</sub> (mice): 85 mg/kg/dia/20dias		

**SECTION VIII. ACCIDENTAL RELEASE MEASURES**

**PRECAUTIONS**

1. Restrict access to area until completion of clean-up.
2. Ventilate area of leak or spill.
3. Extinguish or remove all ignition sources (heat, sparks, flames).
4. Wear adequate personal protective equipment.

**CLEAN-UP PROCEDURE**

Do not touch spilled material. Prevent material from entering sewers or confined spaces. Stop or reduce leak if safe to do so. Contain spill and solutions with earth, sand or absorbent material which does not react with spilled material. For solid material spills, avoid generating dust. Put material in suitable, covered, labeled containers. Flush area with water. Contaminated absorbent material may pose the same hazards as the spilled material.

**SECTION IX. PERSONAL PROTECTIVE EQUIPMENT**

Respiratory protection:	Up to 10 mg/m <sup>3</sup> use SAR operated in a continuous flow mode, full-facepiece SCBA, or full-facepiece SAR. Emergency (unknown concentrations) use positive pressure full-facepiece SCBA, positive pressure full-facepiece SAR. Normal conditions, use gas mask with organic vapor canister and high efficiency particulate filter.
Eye / Face protection:	Use chemical safety goggles and/or a face shield where splashing is possible.
Protective clothing:	Wear chemical protective gloves, coveralls and boots. Recommended material: Responder™. Have a safety shower and eye-wash fountain readily available in the immediate work area.

**SECTION X. TRANSPORT INFORMATION**

<b>Shipping name:</b>	MALEIC ANHYDRIDE	<b>Hazard Class:</b>	8 (corrosive)
<b>Identification number:</b>	UN2215	<b>Packing group:</b>	III

**SECTION XI. ECOLOGICAL INFORMATION**

This section is subject to future development.

**SECTION XII. HANDLING AND STORAGE**

<b>HANDLING:</b>	This material is a VERY TOXIC, CORROSIVE solid. It is also a COMBUSTIBLE dust and so is a DUST EXPLOSION HAZARD. Immediately report leaks, spills or failures of the engineering controls. Inspect containers for damage or leaks before handling. Transfer solids using tools or equipment which are corrosion-resistant. Prevent damage to containers and keep them closed when not in use. Use this material in the smallest possible amounts in appropriate labeled containers and open carefully on a stable surface, in a well-ventilated area. Avoid all ignition sources. Post "NO SMOKING" signs. Do not perform any welding, cutting, soldering, drilling or other hot work on any empty vessel, container or piping until all liquid and vapors have been cleared. Assume that empty containers contain residues which are hazardous.
<b>STORAGE:</b>	Store in a cool, dry, well-ventilated area out of direct sunlight and away from heat and ignition sources. Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. Keep storage area separate from work areas. Protect from accidental contact with water. Post warning signs. Have appropriate fire extinguishers and spill clean-up equipment in or near storage area. Storage facilities should be made of fire resistant materials. Storage away from oxidizers and other incompatible materials such as alkalis. Keep containers tightly closed and labeled.
<b>VENTILATION SYSTEM:</b>	Local exhaust ventilation is preferred to reduce hazardous exposures in work and storage areas. Use a grounded, non-sparking, corrosion resistant ventilation system. A dust collecting system attached to the ventilation system, outside the building, may be necessary.
<b>DISPOSAL CONSIDERATIONS:</b>	Review federal, provincial and local government requirements prior to disposal. Disposal by secure landfill may be acceptable. Incineration is not recommended.

THIS INFORMATION IS BASED UPON CALCULATED DATA. THE COMPANY HOLDS NO RESPONSABILITY FOR DAMAGE SUFFERED BY THE PURCHASER OR OTHER PERSONS HANDLING THESE GOODS IF SAFETY INSTRUCTIONS ARE NOT OBSERVED. THE COMPANY HOLDS NO RESPONSABILITY FOR THE WRONG USE OF THIS MATERIAL, EVEN IF SAFETY INSTRUCTIONS HAVE BEEN FOLLOWED. THE PURCHASER IS SOLELY RESPONSIBLE FOR THE USE OF THIS MATERIAL.