



INTERNATIONAL DIOL COMPANY

Safety Data Sheet

According to Regulation (EC) No. 1272/2008, Regulation (EC) 1907/2006

1. Identification of the substance/mixture and of the responsible company

1.1. Product Identifier: Maleic Anhydride

MALEIC ACID ANHYDRIDE; CIS-BUTENEDIOIC ANHYDRIDE; 2,5-FURANDIONE; TOXILIC ANHYDRIDE; DIHYDRO-2,5-DIOXOFURAN; O-3417; RCRA U147; UN 2215; C4H2O3

1.2. Relevant identified uses of the substance or mixture and uses advised against:

Identified uses: Chemical for synthesis; used as intermediate in synthesis of fumaric and tartaric acid, certain agricultural chemicals, resins, dye intermediates and pharmaceuticals. Also used as a corrosion inhibitor, preservative in fats and oils and as a reactant in adhesives and bonding agents.

1.3. Details of the supplier of the safety data sheet:

International Diol Company
PO Box 12021
Jubail Industrial City - 31961
Kingdom Of Saudi Arabia.

Website: www.sipchem.com/en/affiliates.htm

1.4. Emergency telephone number: 00966-359 9985 (24 hours)

2. Hazards Identification

Maleic Anhydride CAS 108-31-6 Purity: 99.9% minimum

Trace Impurities: Dibutyl phthalate, Acrylic acid, Phthalic acid and anhydride

2.1. Classification of the substance or mixture:

Classification of Labeling in accordance with the CLP Regulations:

Index No	International Chemical Identification	EC No	CAS No	Classification		Labeling			Specific Conc. Limits, M-factor s	Notes
				Hazard Class and Category Code(s)	Hazard statement Code(s)	Pictogram Signal Word Code(s)	Hazard Statement Code(s)	Suppl. Hazard statement Code(s)		
607-096-00-9	Maleic Anhydride	203-571-6	108-31-6	Acute Tox. 4 (Oral) Skin Corr. 1B Resp. Sens. 1 Skin Sens. 1	H302, H314, H334, H317	GHS08 GHS05 GHS07	H302, H314, H334, H317	C; R:22-34-42/43	100	

Classification according to Regulation 1272/2008/EC (CLP)

Basis for Classification This substance is classified based on Directive 1272/2008/EC and its amendments (CLP Regulation,GHS)

MALEIC ANHYDRIDE (108-31-6)

Symbol(s):



Signal Word: Danger

Hazard(s):

H302: Harmful if swallowed

H314: Causes severe skin burns and eye damage

H334: May cause allergic or asthmatic symptoms or breathing difficulties if inhaled

H317: May cause allergic skin reaction

Prevention:

P272: Contaminated work clothing should not be allowed out of the workplace.

P280: Wear protective gloves/protective clothing/eye protection/face protection.

P284: Wear respiratory protection.

P260: Do not breathe dust/fume/gas/mist/vapours/spray.

P264: Wash ... thoroughly after handling.

P270: Do not eat, drink or smoke when using this product.

Response:

P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P342+P311: If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.

P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P302+P352: IF ON SKIN: Wash with plenty of soap and water.

P310: Immediately call a POISON CENTER or doctor/physician.

P303+P361+P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

P362+P364: Take off contaminated clothing and wash it before reuse.

P333+P313: If skin irritation or rash occurs: Get medical advice/attention.

P301+P312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

P301+P330+P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P321: Specific treatment (see first aid statements on this label).

P330: Rinse mouth.

Storage: P405: Store locked up.

Disposal: P501: Dispose of contents/container as specified by regulatory authorities and environmental regulations.

SAFETY DATA SHEET

Emergency overview: DANGER! Causes skin and eye burns. Protect skin and eyes from contact. May cause sensitization following skin contact or inhalation. Do not breath or inhale dusts. Wear protective equipment when handling product.

Potential chronic health effects:

CARCINOGENIC EFFECTS: A4 – Not Classifiable as a Human Carcinogen

MUTAGENIC EFFECTS: Negative (Ames Test)
Positive (mammalian cell test)

REPRODUCTION TOXICITY: Reproductive effects noted in rats. See Section 11.

2.2. Label: See table above.

2.3. Other hazards: None known.

3. Composition/information on ingredients

Formula	C4H2O3
CAS-No.	108-31-6
Index-No.	607-096-00-9
EC-No.	203-571-6
Mol Wt.	98.06 g/mol

4. First Aid Measures

4.1. Description of first aid measures

Eye Contact: Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.

Skin Contact: 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. Clean shoes thoroughly before reuse. Get medical attention immediately.

Inhalation: Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Ingestion: Wash out mouth and water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

4.2. Most important symptoms and effects, both acute and delayed:

Skin and eye irritation and burns. Allergic reaction—cough, shortness of breath, asthma like symptoms. Risk of blindness from significant eye contact.

4.3. Indication of immediate medical attention and special treatment needed:

No additional information available.

5. Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media: Water spray (fog) CO₂, non-alkali foams

Unsuitable extinguishing media: **Do not use dry chemicals that contain alkalis as they may cause rapid exothermic reactions.** Do not use a water jet.

5.2. Special hazards arising from the substance or mixture:

Combustible solid. Dust/air mixtures may ignite or explode

5.3. Advice for fire fighters:

Special protective equipment for fire fighters: Fire fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Prevent mixing with alkali and amines materials.

Further information: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving a personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. Do not allow fire extinguishing water to contaminate surface or groundwater systems. Combustible dust: dust and/or vapors may form explosive mixture with air. Combustion may emit toxic gases (carbon oxides), toxic acidic smoke, fumes and vapors.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures:

Advice for non-emergency personnel: Evacuate the danger zone; follow emergency precautions. Secure emergency assistance immediately. Avoid contact with the material; do not breathe dusts. If possible, provide additional ventilation.

Advice for emergency responders: Do not take action without proper training and emergency equipment. See Section 8 for additional information. Evacuate surrounding areas. Eliminate all ignition sources including flares and all open flames. Avoid all contact with spilled material. Maintain adequate ventilation and wear appropriate respiratory protection.

6.2. Environmental precautions:

Avoid dispersal of spilled material, runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

6.3. Methods and materials for containment:

Stop leak or spill if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, surface waters, basements or confined areas. Wash spillage into effluent treatment plant. Contain and collect spillage using appropriate personal protective equipment. Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products or if a risk assessment indicates this is necessary. Collect and contain spillage with non-combustible, absorbent material (e.g. sand, earth, vermiculite or diatomaceous earth) and place in a container for disposal according to local regulations. Use spark-proof tools and explosion proof equipment. Contaminated absorbent material may pose the same hazard(s) as the spilled product.

6.4. Reference to other sections:

See disposal instruction 13 and exposure controls Section 8.

7. Handling and storage

7.1. Precautions for safe handling:

Observe all label precautions. Use appropriate personal protective equipment (see section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapor or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on protection against fire and explosion: Keep away from flames and sources of ignition – including static.

7.2. Conditions for safe storage, including any incompatibilities:

Store in accordance with local regulations. Store in a segregated and approved area. Store in original or bulk storage container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Eliminate all ignition sources. Separate from oxidizing materials, amines and alkalis.

Bulk storage should be in approved vessels, preferably stainless steel that is grounded and vented. Keep use containers tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

7.3. Specific end uses:

No other additional special end uses are anticipated.

8. Exposure controls/personal protection

8.1. Control parameters:

Personal, workplace or environmental monitoring may be necessary to ensure exposures are below recommended and legal limits.

Exposure limits:

ACGIH: 0.01 mg/m³ TWA (inhalable fraction and vapor); sensitization potential

NIOSH: 0.25 ppm TWA; 1 mg/m³ TWA

10 mg/m³ IDLH

OSHA (US): 0.25 ppm TWA; 1 mg/m³ TWA

Mexico: 0.25 ppm TWA LMPE-PPT; 1 mg/m³ TWA LMPE-PPT

Germany: MAK 0.1ppm, 0.4 mg/m³ TWA

Exposure Limits for Chemicals which may be generated during processing

This material has no components listed.

8.2. Exposure controls:

Engineering measures: Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Individual protection measures:

Hygiene measures: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Discard contaminated clothing or wash thoroughly before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to product dusts, liquid splashes or mists. Goggles should be worn where eye contact is possible.

Hand protection: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is required.

Glove material: nitrile rubber or PVC
Glove thickness: 0.7 mm or thicker
Break through time: > 240 minutes

Other protective equipment: Flame retardant antistatic protective clothing

Respiratory protection: Note: the odor threshold may not provide adequate warning of inhalation exposure. A properly fitted air purifying respirator or air supply respirator should be worn if a risk assessment indicates that respiratory protection is necessary. Respirator selection must be based upon known or measured levels of exposure.

Environmental exposure controls: Ventilation and engineering controls to protect workers and ventilate work area to at or below recommended employee exposure levels. Technical measures are preferred over use of personal protective equipment. Environmental controls, such as scrubber or thermal oxidizer may be required to prevent process releases to the atmosphere. Do not empty or flush into drains.

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties:

Physical State: Solid	Appearance: Not available
Color: colorless	Physical Form: molten liquid crystals
Odor: irritating odor	Odor Threshold: 0.25 ppm
Melting Point: 52.8 °C	Boiling Point: 197 - 199 °C
Evaporation Rate: <1 butyl acetate=1	Flash Point: 102 °C CC
LEL: 1.4 %	UEL: 7.1 %
Autoignition: 477 °C	Vapor Pressure: 1 mmHg 44 °C
Vapor Density (air = 1): 3.4	Density: Not available
Specific Gravity (water = 1): 1.314 60 °C	Water Solubility: hydrolyzes
N-octanol/water: log Pow 1.62 (calculated)	Molecular Weight: 98.06
Molecular Formula: C4-H2-O3	

Solvent Solubility

Soluble: acetone, ether, alcohol, dioxane, chloroform, ligroin, hydrocarbons, benzene, petroleum ether, ethyl acetate, toluene, carbon tetrachloride, o-xylene

10. Stability and reactivity

10.1. Reactivity:

Maleic anhydride in a combustible dust form may catch fire or explode in confined spaces when ignited. May react with moisture, alkali or amines and release of heat.

10.2. Chemical stability:

The product will react with heat and moisture, alkalis and amines.

10.3. Possibility of hazardous reactions:

Exothermic reactions possible with alkali metals, alkali hydroxides, amines, strong alkalis, pyriding, alkaline earth hydroxides, oxidizing agents and water.

10.4. Conditions to avoid:

Avoid heat, flames, sparks and other sources of ignition. Do not store or comingle with alkali materials, amine or oxidizers. Maleic anhydride will react with moisture releasing heat. Dusts may ignite or explode on contact with combustible materials..

10.5. Incompatible materials:

Metals, amines, metal salts, bases, combustible materials, oxidizing materials

10.6. Hazardous decomposition products:

Thermal decomposition will yield oxides of carbon.

11. Toxicological information

11.1. Information on toxicological effects:

<u>Acute oral toxicity LD50 rat:</u>	400 mg/kg (RTECS)
<u>Dermal LD50 rabbit:</u>	2620 mg/kg (RTECS)
<u>Acute inhalation toxicity:</u>	13.1 mg/kg 4 hours (IUCLID)
<u>Acute dermal toxicity LD50 rabbit:</u>	2.335 mg/kg (RTECS)
<u>Skin irritation:</u>	Severe irritation. Causes burns
<u>Eye irritation (rabbit):</u>	Causes burns. Risk of serious damage to eyes
<u>Sensitization (guinea pig):</u>	Positive
<u>Genotoxicity and Reproductive Effects:</u>	4060 mg/kg Oral Rat TDLo (Multigeneration); 1400 mg/kg Oral Rat TDLo (pregnant 6-15 day) mg/kg Oral Rat TDLo (Multigeneration) (RTECS)
Ames test:	negative (OECD Test Guideline 471)
Mutagenicity (mammal cell test):	positive (IUCLID)
<u>Specific target organ toxicity - single exposure:</u>	The substance is not classified as a specific target organ toxicant, single exposure.
<u>Specific target organ toxicity - repeated exposure:</u>	Skin: Repeated or prolonged exposure may cause primary skin

irritation or sensitization dermatitis. Eye: Repeated or prolonged exposure may cause conjunctivitis and corneal erosion. Repeated or prolonged inhalation exposure may cause asthma or respiratory sensitization.

Aspiration hazard:

No information available

11.2. Additional information:

After uptake of large quantities:

Systemic effects: May aggravate existing skin disorders and allergies..

Further data: Handle using good occupational and environmental health practices.

12. Ecological information

12.1. Toxicity

Toxicity in fish LC50: 138 mg/L (48hr Static, *Lepomis macrochirus*)

Toxicity to daphnia and other aquatic invertebrates: 84 mg/L (24hr, *Daphnia magna*)

Toxicity to algae (EC50): 29 mg/L (72hr *Desmodesmus subspicatus*)

12.2. Persistence and degradability:

Readily biodegradable 98% (OECD 301E, 7d)

12.3. Bio accumulative potential:

Bioaccumulation not expected. Log Pos 1.62)

Mobility in soil:

No information available.

12.4. Results of PBT and vPvB assessment:

Assessment not available.

12.5. Other adverse effects:

No additional environmental adverse effects are known.

Additional ecological information: Do not allow product to enter surface waters, wastewater or soil.

13. Disposal considerations

Waste treatment methods: The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. In the US this product is subject to US EPA 40 CFR 262 regulations; Hazardous Waste Number: U147.

14. Transport Information

The transport regulations are cited according to international and/or harmonized transport regulations. Possible national deviations and country specific requirements are not considered.

US DOT Information

Shipping Name: Maleic anhydride

Hazard Class: 8

UN/NA #: UN2215
Packing Group: III
Required Label(s): 8

TDG/ADR Information

Shipping Name: Maleic anhydride
Hazard Class: 8
UN #: UN2215
Packing Group: III
Required Label(s): 8

ADR Tunnel Code Restrictions

This list contains tunnel restriction codes for those substances and/or chemically related entries which are found in chapter 3.2 of the ADR regulations.

RID Information

Shipping Name: Maleic anhydride
Hazard Class: 8
UN #: UN2215
Packing Group: III
Required Label(s): 8

IATA/ICAO Information

Shipping Name: Maleic anhydride
Hazard Class: 8
UN #: UN2215
Packing Group: III
Required Label(s): 8

IMDG Information

Shipping Name: Maleic anhydride
Hazard Class: 8
UN #: UN2215
Packing Group: III

15. Regulatory information

- 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture:

U.S. Federal Regulations

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 311/312 (40 CFR 370.21), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan.

MALEIC ANHYDRIDE (108-31-6)

SARA 313: 1.0 % de minimis concentration

CERCLA: 5000 lb final RQ; 2270 kg final RQ

SARA Section 311/312 (40 CFR 370 Subparts B and C)

Acute Health: Yes Chronic Health: Yes Fire: No Pressure: No Reactive: Yes

U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA
MALEIC ANHYDRIDE	108-31-6	Yes	Yes	Yes	Yes	Yes

Not listed under California Proposition 65

Canadian WHMIS Ingredient Disclosure List (IDL)

MALEIC ANHYDRIDE (108-31-6) 0.1 %

Germany Water Classification

MALEIC ANHYDRIDE (108-31-6)

ID Number 261, hazard class 1 - low hazard to waters

Symbol(s)

C Corrosive

Risk Phrases

R22 Harmful if swallowed.

R34 Causes burns.

R42/43 May cause sensitization by inhalation and skin contact.

Safety Phrases

S2 Keep out of the reach of children.

S22 Do not breathe dust.

S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

Component Analysis - Inventory

Component	CAS	US	CA	EU	AU	PH	JP	KR	CN	NZ
MALEIC ANHYDRIDE	108-31-6	Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	Yes

European Union GHS Classifications

Classifications below according to Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures (CLP).

MALEIC ANHYDRIDE (108-31-6)

Acute toxicity - Oral

Category 4

H302 Harmful if swallowed.

Skin corrosion/irritation damage.

Category 1B

H314 Causes severe skin burns and eye

Respiratory sensitizers

Category 1

H334 May cause allergic or asthmatic symptoms or breathing difficulties if inhaled.

Skin sensitizers

Category 1

H317 May cause allergic skin reaction.

European Union GHS Labelling Information

Labelling information below is according to Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures (CLP).

MALEIC ANHYDRIDE (108-31-6)

Symbol(s):



Signal Word: Danger

Hazard(s):

H302: Harmful if swallowed

H314: Causes severe skin burns and eye damage

H334: May cause allergic or asthmatic symptoms or breathing difficulties if inhaled

H317: May cause allergic skin reaction

Prevention:

P272: Contaminated work clothing should not be allowed out of the workplace.

P280: Wear protective gloves/protective clothing/eye protection/face protection.

P284: Wear respiratory protection.

P260: Do not breathe dust/fume/gas/mist/vapours/spray.

P264: Wash ... thoroughly after handling.

P270: Do not eat, drink or smoke when using this product.

Response:

P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P342+P311: If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.

P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P302+P352: IF ON SKIN: Wash with plenty of soap and water.

P310: Immediately call a POISON CENTER or doctor/physician.

P303+P361+P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

P362+P364: Take off contaminated clothing and wash it before reuse. P333+P313: If skin irritation or rash occurs: Get medical advice/attention. P301+P312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

P301+P330+P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P321: Specific treatment (see ... on this label).

P330: Rinse mouth.

Storage:

P405: Store locked up.

Disposal:

P501: Dispose of contents/container to ...

Japan GHS Classifications

MALEIC ANHYDRIDE (108-31-6)

Acute toxicity - Oral - Category 4	H302 Harmful if swallowed.
Acute toxicity - Dermal - Category 3	H311 Toxic in contact with skin.
Acute toxicity - Inhalation - Vapour - Category 1	H330 Fatal if inhaled.
Skin corrosion/irritation - Category 1	H314 Causes severe skin burns and eye damage.
Serious eye damage/eye Irritation - Category 1	H318 Causes serious eye damage.
Respiratory sensitizers - Category 1 asthmatic	H334 May cause allergic or symptoms or breathing difficulties if inhaled.
Skin sensitizers - Category 1 reaction.	H317 May cause allergic skin reaction.
Specific target organ toxicity - Single exposure - Category 1 digestive	H370 Causes damage to and/or respiratory system.
Specific target organ toxicity - Single exposure - Category 2 liver.	H371 May cause damage to liver.

Specific target organ toxicity - Repeated exposure - Category 1 **H372** Causes damage to circulatory system and/or respiratory system through prolonged or repeated exposure.

Specific target organ toxicity - Repeated exposure - Category 2 **H373** May cause damage to kidneys, liver, and/or spleen through prolonged or repeated exposure.

Hazardous to aquatic environment - acute hazard - Category 3 **H402** Harmful to aquatic life.

Japan GHS Labelling Information

Labelling information below according to classifications published by Japan's Chemicals Classification Program according to the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

MALEIC ANHYDRIDE (108-31-6) Symbol(s):



Signal Word: Danger

Hazard(s):

H302: Harmful if swallowed

H311: Toxic in contact with skin

H330: Fatal if inhaled

H314: Causes severe skin burns and eye damage

H318: Causes serious eye damage

H334: May cause allergic or asthmatic symptoms or breathing difficulties if inhaled

H317: May cause allergic skin reaction

H370: Causes damage to organs

H371: May cause damage to organs

H372: Causes damage to organs through prolonged or repeated exposure

H373: May cause damage to organs through prolonged or repeated exposure

H402: Harmful to aquatic life

Prevention:

P271: Use only outdoors or in a well-ventilated area.

P272: Contaminated work clothing should not be allowed out of the workplace.

P280: Wear protective gloves/protective clothing/eye protection/face protection.

P284: Wear respiratory protection.

P260: Do not breathe dust/fume/gas/mist/vapours/spray.

P264: Wash ... thoroughly after handling.

P270: Do not eat, drink or smoke when using this product.

P273: Avoid release to the environment.

Response:

P308+P313: IF exposed or concerned: Get medical advice/attention.

P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P310: Immediately call a POISON CENTER or doctor/physician.

P342+P311: If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.

P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P302+P352: IF ON SKIN: Wash with plenty of soap and water. **P310:** Immediately call a POISON CENTER or doctor/physician. **P303+P361+P353:** IF ON SKIN (or hair):

Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

P362+P364: Take off contaminated clothing and wash it before reuse.

P333+P313: If skin irritation or rash occurs: Get medical advice/attention.

P301+P312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

P301+P330+P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P310: Immediately call a POISON CENTER or doctor/physician.

P320: Specific treatment is urgent (see ... on this label).

P330: Rinse mouth.

Storage:

P403+P233: Store in a well-ventilated place. Keep container tightly closed.

P405: Store locked up.

Disposal:

P501: Dispose of contents/container to ...

Korea GHS Classifications (SV)

Classifications below published by Korea's Ministry of Environment (MOE), Ministry of Employment

and Labor

(MOEL) or Office of National Emergency Management (NEMA, physical hazards only).

MALEIC ANHYDRIDE (108-31-6)

MOEL: Corrosive to metals - Category 1 **H290** May be corrosive to metals.

Acute toxicity - Oral - Category 4 **H302** Harmful if swallowed.

Acute toxicity - Dermal - Category 3 **H311** Toxic in contact with skin.

Acute toxicity - Inhalation - Vapour - Category 1 **H330** Fatal if inhaled.

Skin corrosion/irritation - Category 1 **H314** Causes severe skin burns and eye damage.

Serious eye damage/eye Irritation - Category 1 **H318** Causes serious eye damage.

Respiratory sensitizers - Category 1 **H334** May cause allergic or asthmatic symptoms or breathing difficulties if inhaled.

Skin sensitizers - Category 1 **H317** May cause allergic skin reaction. Specific target organ

toxicity - Single exposure - Category 1 **H370** Causes damage to digestive system and/or respiratory system.

Specific target organ toxicity - Single exposure - Category 2 **H371** May cause damage to liver.

Specific target organ toxicity - Repeated exposure - Category 1 **H372**

Causes damage to circulatory system and/or respiratory system through prolonged or repeated exposure.

Specific target organ toxicity - Repeated exposure - Category 2 **H373**

May cause damage to kidneys, liver, and/or spleen through prolonged or repeated exposure.

Korea GHS Labelling Information

Labelling information below according to classifications published by Korea's Ministry of Environment (MOE), Ministry of Employment and Labor (MOEL) or Office of National Emergency Management (NEMA, physical hazards only).

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H334: May cause allergic or asthmatic symptoms or breathing difficulties if inhaled

H317: May cause allergic skin reaction

H370: Causes damage to organs

H372: Causes damage to organs through prolonged or repeated exposure

Prevention:

P234: Keep only in original container.

P271: Use only outdoors or in a well-ventilated area.

P272: Contaminated work clothing should not be allowed out of the workplace.

P280: Wear protective gloves/protective clothing/eye protection/face protection.

P284: Wear respiratory protection.

P260: Do not breathe dust/fume/gas/mist/vapours/spray.

P264: Wash ... thoroughly after handling.

P270: Do not eat, drink or smoke when using this product.

Response:

P308+P313: IF exposed or concerned: Get medical advice/attention.

P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P310: Immediately call a POISON CENTER or doctor/physician.

P342+P311: If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.

P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P302+P352: IF ON SKIN: Wash with plenty of soap and water.

P310: Immediately call a POISON CENTER or doctor/physician.

P303+P361+P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing.

Rinse skin with water/shower.

P362+P364: Take off contaminated clothing and wash it before reuse.

P333+P313: If skin irritation or rash occurs: Get medical advice/attention.

P301+P312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

P301+P330+P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P310: Immediately call a POISON CENTER or doctor/physician.

P320: Specific treatment is urgent (see ... on this label).

P330: Rinse mouth.

P390: Absorb spillage to prevent material-damage.

Storage:

P403+P233: Store in a well-ventilated place. Keep container tightly closed.

P405: Store locked up.

P406: Store in corrosive resistant/ ... container with a resistant inner liner.

Disposal:

P501: Dispose of contents/container to ...

New Zealand GHS Classifications

Classifications below according to the Environmental Risk Management Authority's (ERMA) Hazardous Substances and New Organisms (HSNO) Act, as amended. For a reference list defining the alphanumeric categories, please visit ChemADVISOR's website at www.chemadvisor.com/sdsoncommand\ghs_NZ.html

MALEIC ANHYDRIDE (108-31-6) Approval: HSR003012

Acute toxicity - Oral - Category 4 **H302** Harmful if swallowed.

Skin corrosion/irritation - Category 1C **H314** Causes severe skin burns and eye damage.

Serious eye damage/eye Irritation - Category 1 **H318** Causes serious eye damage.

Respiratory sensitizers - Category 1 **H334** May cause allergic or asthmatic symptoms or breathing difficulties if inhaled.

Skin sensitizers - Category 1 **H317** May cause allergic skin reaction.

Terrestrial Vertebrate Ecotoxicity - Category 3 **H433** Harmful to terrestrial vertebrates.

New Zealand GHS Labelling Information

Labelling information below according to classifications published by New Zealand's Environmental Risk Management Authority's (ERMA) Hazardous Substances and New Organisms (HSNO) Act, as amended.

MALEIC ANHYDRIDE (108-31-6)**Symbol(s):**

Signal Word: Danger

Hazard(s):

H302: Harmful if swallowed

H314: Causes severe skin burns and eye damage

H318: Causes serious eye damage

H334: May cause allergic or asthmatic symptoms or breathing difficulties if inhaled

H317: May cause allergic skin reaction **H433:** Harmful to terrestrial vertebrates

Prevention:

P272: Contaminated work clothing should not be allowed out of the workplace.

P280: Wear protective gloves/protective clothing/eye protection/face protection.

P284: Wear respiratory protection.

P260: Do not breathe dust/fume/gas/mist/vapours/spray.

P264: Wash ... thoroughly after handling.

P270: Do not eat, drink or smoke when using this product.

Response:

P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P342+P311: If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.

P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P302+P352: IF ON SKIN: Wash with plenty of soap and water.

P310: Immediately call a POISON CENTER or doctor/physician.

P303+P361+P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

P362+P364: Take off contaminated clothing and wash it before reuse.

P333+P313: If skin irritation or rash occurs: Get medical advice/attention.

P301+P312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

P301+P330+P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P310: Immediately call a POISON CENTER or doctor/physician.

P321: Specific treatment (see ... on this label).

P330: Rinse mouth.

Storage:

P405: Store locked up.

Disposal:

P501: Dispose of contents/container to ...

South Africa GHS Classifications

No published information available. This material may be hazardous according to published criteria for classification.

Taiwan GHS Classifications

Information below presented according to Taiwan's Bureau of Standards, Metrology and Inspection (BSMI) of the Ministry of Economic Affairs. This agency has published a series of standards (CNS 15030 1-27 Chemical Classification and Labelling) which provide guidance on classification and labelling of chemicals according to GHS.

MALEIC ANHYDRIDE (108-31-6)

Taiwan:

Acute toxicity - Oral - Category 4 **H302** Harmful if swallowed.

Skin corrosion/irritation - Category 1 **H314** Causes severe skin burns and eye damage.

Serious eye damage/eye Irritation - Category 1 **H318** Causes serious eye damage.

Respiratory sensitizers - Category 1 **H334** May cause allergic or asthmatic symptoms or breathing difficulties if inhaled.

Skin sensitizers - Category 1 **H317** May cause allergic skin reaction.

Taiwan GHS Labelling Information

Labelling information below according to classifications published by Taiwan's Bureau of Standards, Metrology and Inspection (BSMI) of the Ministry of Economic Affairs. This agency has published a series of standards (CNS 15030 1-27 Chemical Classification and Labelling) which provide guidance on classification and labelling of chemicals according to GHS.

MALEIC ANHYDRIDE (108-31-6)

Symbol(s):



Signal Word: Danger

Hazard(s):

H302: Harmful if swallowed

H314: Causes severe skin burns and eye damage

H318: Causes serious eye damage

H334: May cause allergic or asthmatic symptoms or breathing difficulties if inhaled

H317: May cause allergic skin reaction

Prevention:

P272: Contaminated work clothing should not be allowed out of the workplace.

P280: Wear protective gloves/protective clothing/eye protection/face protection.

P284: Wear respiratory protection.

P260: Do not breathe dust/fume/gas/mist/vapours/spray.

P264: Wash ... thoroughly after handling.

P270: Do not eat, drink or smoke when using this product.

Response:

P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P342+P311: If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.

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P310: Immediately call a POISON CENTER or doctor/physician.

P321: Specific treatment (see ... on this label).

P330: Rinse mouth.

Storage:

P405: Store locked up.

Disposal:

P501: Dispose of contents/container to ...

15.2. Chemical Safety Assessment:

Sipchem has not conducted a chemical safety assessment for this product.

16. Other information

16.1. Training Advice:

Provide safety information, instruction and training to operators handling maleic anhydride..

The information and recommendations herein are taken from data contained in independent, industry recognized references. Although reasonable care has been taken in the preparation of the information herein, Sipchem and International Diol Company make no guarantee, warranty (express or implied) or other representation and assume no responsibility as to the accuracy or suitability of such information for application of the information, since conditions of its use are beyond control of these companies. Sipchem and International Diol Company shall not bear any liability whatsoever for any loss or damage incurred in connection with the use of this substance.