

Safety Data Sheet

Maleic Anhydride, Molten

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

- 1.1 Product identifier: Maleic anhydride, molten
Registration number (REACH): 01-2119463268-32-xxxx ; 01-2119472428-31-xxxx
EC number: 203-571-6
CAS number: 108-31-6
Alternative name(s): Furan-2,5-dione
- 1.2 Relevant identified uses of the substance or mixture and uses advised against:
Relevant identified uses: Industrial manufacturing.
Uses advised against: No information available.
- 1.3 Details of the supplier of the safety data sheet:
Distributed by:
Silver Fern Chemical, Inc.
2226 Queen Anne Avenue North
Seattle WA 98109, USA
Customer Service: 1-866-282-3384 / info@silverfernchemical.com
- 1.4 **Emergency telephone number:**
24 Hour Emergency Contact
Infotrac 1-800-535-5053 (USA & Canada)
Outside USA & Canada 1-352-323-3500

SECTION 2: HAZARDS IDENTIFICATION

- 2.1 Classification of the substance or mixture:
- 2.1.1 GHS Classification
- | | |
|---|---------------------|
| Acute toxicity (oral): | Acute Tox. 4, H302 |
| Skin corrosion/irritation: | Skin Corr. 1B, H314 |
| Serious eye damage/eye irritation: | Eye Dam. 1, H318 |
| Respiratory sensitisation: | Resp. Sens. 1, H334 |
| Skin sensitisation: | Skin Sens. 1, H317 |
| Specific target organ toxicity (repeated exposure): | STOT RE 1, H372 |
| Specific target organ toxicity (repeated exposure): | STOT RE 2, H373 |
- EUH071: Corrosive to the respiratory tract.
Additional information: For full text of R-phrases and Hazard- and EU Hazard-statements: see SECTION 16.
- 2.2 Label elements:

Hazard pictogram(s):



Signal word(s): Danger

Hazard statement(s):

H302 Harmful if swallowed.



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H314 Causes severe skin burns and eye damage.

H317 May cause an allergic skin reaction.

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

H372 Causes damage to respiratory system through prolonged or repeated exposure (inhalation).

H373 May cause damage to kidneys through prolonged or repeated exposure (oral).

Precautionary statement(s):

P260 Do not breathe dust/fume/gas/mist/vapors/spray.

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

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

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

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

P363 Wash contaminated clothing before reuse.

P501 Dispose of contents/container in accordance with local/regional/national/ international regulations.

Other hazards: There is no additional information.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances:

Name: Maleic anhydride

EC number: 203-571-6

CAS number:108-31-6

Molecular formula:

C₄H₂O₃ Molar mass:

98.06 g/mol

Degree of purity: ≥ 99.6 — < 100.0 % (w/w)

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures:

General notes

Do not leave affected person unattended. Remove victim out of the danger area. Keep affected person warm, still and covered. Take off immediately all contaminated clothing. In all cases of doubt, or when symptoms persist, seek medical advice. In case of unconsciousness place person in the recovery position. Never give anything by mouth. Call a POISON CENTER or doctor if you feel unwell. Wash contaminated clothing before reuse. After contact with skin, wash immediately with plenty of water.

Following inhalation

If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions. Provide fresh air. If experiencing respiratory symptoms: Call a POISON CENTER or doctor.

Following skin contact

Rinse skin with water/shower. Immerse in cool water/wrap in wet bandages. Take off immediately all contaminated clothing.

Following eye contact

Remove contact lenses, if present and easy to do. Continue rinsing. Irrigate copiously with



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clean, fresh water for at least 10 minutes, holding the eyelids apart. Call a doctor if you feel unwell.

Following ingestion

Rinse mouth with water (only if the person is conscious). Do NOT induce vomiting. IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

- 4.2 Most important symptoms and effects, both acute and delayed:
See SECTION 11: Toxicological information.
- 4.3 Indication of any immediate medical attention and special treatment needed:
Treat symptomatically.

SECTION 5: FIREFIGHTING MEASURES

- 5.1 Extinguishing media:
Suitable extinguishing media: CO₂, water
Unsuitable extinguishing media: No data available.
- 5.2 Special hazards arising from the substance or mixture: Deposited combustible dust has considerable explosion potential. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Combustible dust, may give rise to explosion hazards. Danger of bursting container.
Hazardous combustion products: nitrogen oxides (NO_x), carbon monoxide (CO), carbon dioxide (CO₂)
- 5.3 Advice for firefighters: In case of fire and/or explosion do not breathe fumes. Co-ordinate firefighting measures to the fire surroundings. Do not allow firefighting water to enter drains or water courses. Collect contaminated firefighting water separately. Fight fire with normal precautions from a reasonable distance. Breathing apparatus. Self-contained breathing apparatus. Avoid release to the environment.

SECTION 6: ACCIDENTAL RELEASE MEASURES

- 6.1 Personal precautions, protective equipment and emergency procedures:
For non-emergency personnel: Remove persons to safety. Use personal protective equipment as required. [In case of inadequate ventilation] wear respiratory protection. Special danger of slipping by leaking/spilling product.
For emergency responders: Wear breathing apparatus if exposed to vapors/dust/spray/gases.
- 6.2 Environmental precautions: Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it. If substance has entered a water course or sewer, inform the responsible authority. Avoid release to the environment.
- 6.3 Methods and material for containment and cleaning
up Advices on how to contain a spill
Covering of drains. - Take up mechanically. - Avoid breathing dust.
Advices on how to clean up a spill
Take up mechanically.
Other information relating to spills and releases
Place in appropriate containers for disposal. Ventilate affected area.
- 6.4 Reference to other sections: See Section 7 for information on safe handling. See Section 8 for information on personal protection equipment. See Section 13 for disposal information.



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SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling: Follow

Recommendations

- Measures to prevent fire as well as aerosol and dust generation

Use local and general ventilation. Take precautionary measures against static discharge. Use only in wellventilated areas. Ground/bond container and receiving equipment.

- Warning

Dust deposits may accumulate on all deposition surfaces in a technical room. The product in the delivered form is not dust explosion capable; the enrichment of fine dust however leads to the danger of dust explosion.

Advice on general occupational hygiene

Wash hands after use. Do not eat, drink and smoke in work areas. Remove contaminated clothing and protective equipment before entering eating areas. Never keep food or drink in the vicinity of chemicals. Never place chemicals in containers that are normally used for food or drink. Keep away from food, drink and animal feedingstuffs.

7.2 Conditions for safe storage, including any incompatibilities:

Managing of associated risks

- Explosive atmospheres

Incompatible substances or mixtures Consideration of other advice

- Ventilation requirements

Use local and general ventilation.

- Packaging compatibilities

Only packagings which are approved (e.g. acc. to ADR) may be used.

7.3 Specific end use(s):

See the attached Exposure scenarios.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

National limit values

Occupational exposure limit values (Workplace Exposure Limits)

CAS No.	Ingredient	Source	Value
108-31-6	Furandione	OSHA	TWA 1 mg/m ³ (0.25 ppm)
ACGIH	TWA: 0.1 ppm		
NIOSH	TWA 1 mg/m ³ (0.25 ppm)		

Relevant DNELs/DMELs/PNECs and other threshold levels

- human health values

Endpoint	Threshold level	Protection goal, route of exposure	Used in	Exposure time
DNEL	0.4 mg/m ³	human, inhalatory	worker (industry)	chronic - systemic effects
DNEL	0.8 mg/m ³	human, inhalatory	worker (industry)	acute - systemic effects
DNEL	0.4 mg/m ³	human, inhalatory	worker (industry)	chronic - local effects
DNEL	0.8 mg/m ³	human, inhalatory	worker (industry)	acute - local effects

- environmental values



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Endpoint	Threshold level	Organism	Environmental compartment	Exposure time
PNEC	0.1 mg/l	aquatic organisms	freshwater	short-term (single instance)
PNEC	0.01 mg/l	aquatic organisms	marine water	short-term (single instance)
PNEC	44.6 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
PNEC	0.334 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
PNEC	0.033 mg/kg	aquatic organisms	marine sediment	short-term (single instance)
PNEC	0.042 mg/kg	terrestrial organisms	soil	short-term (single instance)
				instance)
PNEC	0.4281 mg/l		intermittent releases to water	

Biological monitoring guidance values (BMGVs)

No information available.

8.2 Exposure controls:

8.2.1 Appropriate engineering controls: Exhaust ventilation.

8.2.2 Individual protection measures, such as personal protective equipment:

8.2.2.1 Eye/face protection: Wear eye/face protection.

8.2.2.2 Skin protection:

Hand protection: In the case of wanting to use the gloves again, clean them before taking off and air them well. Nitrile. Neoprene. Wear protective gloves against thermal risks (heat and/or fire).

Other: Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended. Wash hands thoroughly after handling. Chemical protection suit. Footwear protecting against chemicals. Wear protective clothing for protection against heat and flame.

8.2.2.3 Respiratory protection: Particulate filter device (EN 143).

8.2.2.4 Thermal hazards: No data available.

8.2.3 Environmental exposure controls: Use appropriate container to avoid environmental contamination. Keep away from drains, surface and groundwater.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties:

Appearance:	Solid (flakes)
Odor:	characteristic
Odor threshold:	not available
pH:	not applicable
Melting point/freezing point:	53 - 58 °C
Initial boiling point and boiling range:	200.1 °C at 1,014 hPa
Flash point:	Substance is a solid at 20 °C. The flash point of the molten substance is 100 - 110 °C (cc).
Evaporation rate:	not determined
Flammability (solid, gas):	non-flammable
Upper/lower flammability or explosive limits:	non explosive



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Vapor pressure :	15.1 Pa at 22 °C
Vapor density:	not determined
Relative density:	1.48 g/cm ³ at 20 °C
Solubility(ies):	Water solubility 400 g/l at 20 °C
Partition coefficient: n-octanol/water:	Log Kow (Pow): -2.61 at 20 °C
Auto-ignition temperature:	not determined
Decomposition temperature:	not available
Viscosity:	not relevant (solid matter)
Explosive properties:	none
Oxidising properties:	None

9.2 Other information: solid content 100 %

SECTION 10: STABILITY AND REACTIVITY

- 10.1 Reactivity: Concerning incompatibility: see below "Conditions to avoid" and "Incompatible materials".
- 10.2 Chemical stability: The material is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.
- 10.3 Possibility of hazardous reactions: No known hazardous reactions.
- 10.4 Conditions to avoid: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Hints to prevent fire or explosion
Do not subject to grinding/shock/friction. Heating may cause a fire or explosion. Keep away from oxidizing and acidic substances.
Physical stresses which might result in a hazardous situation and have to be avoided
High temperatures - static discharges.
- 10.5 Incompatible materials: Water - bases - strong oxidisers - alkali metal.
- 10.6 Hazardous decomposition products: Reasonably anticipated hazardous decomposition products produced as a result of use, storage, spill and heating are not known. Hazardous combustion products: see section 5.

SECTION 11: TOXICOLOGICAL INFORMATION

- 11.1 Information on toxicological effects:
- acute toxicity: Harmful if swallowed.
 - Acute toxicity estimate
(ATE) oral 500 mg/kg
 - skin corrosion/irritation: Causes severe skin burns and eye damage.
 - serious eye damage/irritation: Causes serious eye damage.
 - respiratory or skin sensitisation: May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction.
 - germ cell mutagenicity: Shall not be classified as germ cell mutagenic.
 - carcinogenicity: Shall not be classified as carcinogenic.
 - reproductive toxicity: Shall not be classified a reproductive toxicant.
 - STOT-single exposure: Shall not be classified as a specific target organ toxicant (single exposure).
 - STOT-repeated exposure:
 - aspiration hazard: Shall not be classified as presenting an aspiration hazard.



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SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity:

Shall not be classified as hazardous to the aquatic environment.

12.2 Persistence and degradability: No data available.

12.3 Bioaccumulative potential: n-octanol/water (log KOW) -2.61 (19.8 °C)

12.4 Mobility in soil: Henry's law constant 0 Pa m³/mol at 25 °C;

The Organic Carbon normalised adsorption coefficient

1.624

12.5 Results of PBT and vPvB assessment: Data are not available.

12.6 Other adverse effects: Data are not available.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods:

Dispose off in accordance with local and national regulations.

Sewage disposal-relevant information

Do not empty into drains. Avoid release to the environment. Refer to special instructions/safety data sheets.

Waste treatment of containers/packagings

It is a dangerous waste; only packagings which are approved (e.g. acc. to ADR) may be used.

Completely emptied packages can be recycled. Handle contaminated packages in the same way as the substance itself.

Remarks

Please consider the relevant national or regional provisions. Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities.

SECTION 14: TRANSPORT INFORMATION (DOT; IMO/IMDG; ICAO/IATA)

14.1 UN number: 2215

14.2 UN proper shipping name: MALEIC ANHYDRIDE, MOLTEN

14.3 Transport hazard class(es): 8

14.4 Packing group: III

14.5 Environmental hazards: No

14.6 Special precautions for user: RQ : 5,000 lbs

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code: -

SECTION 15: REGULATORY INFORMATION

Regulatory Overview The regulatory data in Section 15 is not intended to be all-inclusive, only selected regulations are represented.

Toxic Substance Control Act (TSCA) All components of this material are either listed or exempt from listing on the TSCA Inventory.

EPCRA 302 Extremely Hazardous:

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

EPCRA 313 Toxic Chemicals:

Furandione

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Proposition 65 - Carcinogens (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Developmental Toxins (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Female Repro Toxins (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Male Repro Toxins (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 Label Warning:

This product contains no chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

New Jersey RTK Substances (>1%):

Furandione

Pennsylvania RTK Substances (>1%):

Furandione

OSHA Process Safety Management Standard Highly Hazardous Chemicals, Toxics and Reactives:

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

US EPA List of Regulated Substances under the Risk Management Plan (RMP) Program:

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

US EPA Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) under the Minimum Risk Exemption:

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

U.S. - DEA List II or Essential Chemicals:

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

U.S. - DEA - Exempt Chemical Mixtures - List 1 and 2:

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To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

US DHS Chemical Facility Anti-Terrorism Standards (CFATS):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

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

- Directive on industrial emissions (VOCs, 2010/75/EU)
VOC content 100 %

Chemical safety assessment: Chemical Safety Assessment has been carried out for this substance.

SECTION 16: OTHER INFORMATION

Sources of key data used to compile the Safety Data Sheet: This Safety Data Sheet is in compliance with the requirements of Annex II of the European Parliament and Council Regulation (EC) No. 1907/2006.

Full text of the listed hazard statements:

H302 Harmful if swallowed.

H314 Causes severe skin burns and eye damage. H317 May cause an allergic skin reaction.

H318 Causes serious eye damage.

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled. H372 Causes damage to organs through prolonged or repeated exposure.

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

Abbreviations and acronyms

ADR Accord européen relatif au transport international des marchandises dangereuses par route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

CAS Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)

CLP Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures

CMR Carcinogenic, Mutagenic or toxic for Reproduction

DMEL Derived Minimal Effect Level

DNEL Derived No-Effect Level

GHS "Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations

MARPOL International Convention for the Prevention of Pollution from Ships (abbr. of "Marine Pollutant")

PBT Persistent, Bioaccumulative and Toxic

PNEC Predicted No-Effect Concentration

REACH Registration, Evaluation, Authorisation and Restriction of Chemicals



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VOC Volatile Organic Compounds
vPvB very Persistent and very Bioaccumulative

Disclaimer

The information on this SDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, expressed or implied, regarding its correctness. Some information presented and conclusions drawn herein are from sources other than direct test data on the substance itself. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage, or expense arising out of or in any way connected with handling, storage, use, or disposal of this product. If the product is used as a component in another product, this SDS information may not be applicable.

Approved – TL 11-7-23