



Safety Data Sheet

Issuing Date	1996. 6.25
Page	1/7
Rev. No.	9
Rev. Date	2014. 12. 5.

MALEIC ANHYDRIDE

1. IDENTIFICATION

- a. Product name MALEIC ANHYDRIDE
- b. Recommend use of the chemical Unsaturated Polyester resin, Modified Alkyd Resin, Plasticizer, Paper sizes
- c. Restriction on use No data available
- d. Manufacture Information

Factory Everchem Specialty Chemicals
1400 N. Providence Road, Media, PA 19063, USA
(484) 234-5030
Safety Environment Team

HEAD OFFICE (484) 234-5030

For Chemical Emergency - Spill, Leak, Fire, Exposure or Accident

Call CHEMTREC Day or Night USA + Canada = 1-800-424-9300 / 703-527-3887

2. HAZARD IDENTIFICATION

- a. Hazard-Risk Classification
- Acute toxicity(oral): Category 4
 - Skin corrosion/Irritation: Category 1
 - Serious eye damage/Irritation: Category 1
 - Respiratory sensitization: Category 1
 - Skin sensitization: Category 1
 - Specific target organ systemic toxicity(single exposure): Category 1 (Respiratory, digestive organ)
 - Specific target organ systemic toxicity(single exposure): Category 2 (Liver)
 - Specific target organ systemic toxicity(repeated exposure): Category 1 (Respiratory, Blood system)
 - Specific target organ systemic toxicity(repeated exposure): Category 2 (Kidney, Liver, Spleen)

- b. Label elements including precautionary statements

Symbol



Signal word

Dangerous

Hazard statement

- H302 Harmful if swallowed
- H314 Should be causes severe skin burns and eye damage.
- H318 Cause serious eye damage
- H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled
- H317 May cause an allergic skin reaction
- H370 Cause damage to organs
- H371 May Cause damage to organs
- H372 Cause damage to organs through prolonged or repeated exposure
- H373 May Cause damage to organs through prolonged or repeated exposure

Precaution statement

Precaution



Safety Data Sheet

Issuing Date	1996. 6.25
Page	2/7
Rev. No.	9
Rev. Date	2014. 12. 5.

P260	Do not breathe dust/fume/gas/mist/vapor/spray.
P261	Avoid breathing dust/fume/gas/mist/vapours/spray
P264	Wash hand. thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P272	Contaminated work clothing should not be allowed out of the workplace.
P280	Wear protective gloves/protective clothing/eye protection/face protection
P285	In case of inadequate ventillation wear respiratory protection.

Response

P302+P352	If on skin : Wash with plenty of soap and water.
P301+P312	If swallowed : Call a poison center or doctor/physician if you feel unwell.
P330	Rinse mouth
P301+P330+P331	If swallowed : Rinse mouth. Do not induce vomiting.
P303+P361+P353	If on skin(or hair) Take off immediately all contaminated clothing. Rinse skin with water/shower
P304+P340	If inhaled : Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P321	Soecific treatment
P310	Immediately call a poinon center or doctor/physician.
P304+P341	If inhaled : If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
P307+P311	If exposed: Call a poison center or doctor/physician.
P342+P311	If experiencing respiratory symptoms: Call a poison center or doctor/physician.
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.
P305+P351+P338	If in eyes : Rinse cautously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P314	Get medical advice/attention if you feel unwell.
P363	Wash contaminated clothing before reuse.
Storage	
P403+P233	Store in well-ventillated place. Keep container tightly closed.
P405	Store locked up.
Disposal	
P501	Dispose of contents/container to waste management act.

c. Othe Hazard-Risk which are not included in the classification criteria (NFPA)

Heath	3
Fire	1
Reactivity	1

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Other name	CAS Number	EN Number	Content (%)
Maleic anhydride	cis-Butenedioic anhydride, 2,5-Furandione	108-31-6	203-571-6	99.5 (Min)
Other	-	-	-	0.5 (Max)

4. FIRST AID MEASURE

a. Inhalation	Move from exposure immediately if adverse effect. If breathing has stopped, apply artificial respiration.
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Safety Data Sheet

Issuing Date	1996. 6.25
Page	3/7
Rev. No.	9
Rev. Date	2014. 12. 5.

- If breathing is difficult, qualified staff should control oxygen.
- Immediately get medical attention.
- b. Skin contact
 - Immediately wash with soap and water for at least 15 minutes.
 - Immediately get medical attention.
 - Completely Wash and dry contaminated clothing and shoes before reuse
 - Throw away contaminated shoes.
- c. Ingestion
 - Contact local poison control center or physician immediately.
 - Never make an unconscious person vomit or drink fluids.
 - Give large amounts of water or milk.
 - Do not induce vomiting.
 - Allow vomiting to occur. When vomiting occurs, keep head lower than hips to help prevent aspiration.
 - If person is unconscious, turn head to side.
 - Get immediate medical advice/attention.
- d. Eye contact
 - Irrigate exposed eye with copious amounts of room temperature water 15 minutes.
 - Get immediate medical advice/attention.
- e. Note to physician
 - For inhalation, consider oxygen.
 - Avoid gastric lavage or emesis.

5. FIRE-FIGHTING METHOD

- a. Extinguish media
 - Carbon dioxide, Water, Regular foam
- b. Specific hazards arising from the chemical
 - Pyrolysis product
 - Oxides of carbon, Irritating fume/gas.
 - Fire and explosion hazards
 - Slight fire hazard. Dust/air mixture may ignite or explode.
- c. Specific protective equipment and precaution for fire-fighter
 - Wear appropriate chemical resistance equipment.
 - Move container from fire area if it can be done without risk
 - Cool containers with water spray until after the fire is out.
 - Stay away from the ends of tank.
 - Water or foam may cause frothing.

6. Accidental release measure

- a. Personal precaution, protective equipment and emergency procedures
 - Do not touch spilled material.
 - Stop leak if possible without personal risk.
 - Wear appropriate personnel protective equipment.
 - Use adequate ventilation.
- b. Environment precaution and protective procedure
 - Diaphragm for not flowing down the drain (underground water, surface water) spill.
 - Absorb with activated carbon. Collect spilled using mechanical equipment.
- c. Methods and material for containment and cleaning up
 - Small spills
 - Collect spilled material in appropriate container for disposal.
 - Small spills : Move containers away from spill to a safe area.
 - large spills
 - Dike for later disposal
 - Keep unnecessary people away, isolate hazard area



Safety Data Sheet

Issuing Date	1996. 6.25
Page	4/7
Rev. No.	9
Rev. Date	2014. 12. 5.

7. HANDLING AND STORAGE

Storage	Store in cool/dry place Store in a closed container. Keep away from ignition source. Store in a well-ventillated place.
Handling	Do not raise dust, adequtely ventilate to raise dust. Avoid contact direct with body. Wear appropriate personel protective equipment.

8. Exposure controls and personal protection.

a. Control parameter

OSHA PEL	- TWA : 0.25 ppm, 1 mg/m ³
NIOSH regulation	- TWA : 0.25 ppm, 1 mg/m ³
ACGIH regulation	- TWA : 0.1 ppm

b. Appropriate engineerign controls

Ensure compliance with applicable exposure limits
Provide lalac exhaust ventillation system. Maintainging an appropriate wind speed.

c. Personal protective equipment

Eye protection	Wear splash resisitant safety goggles. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.
Body protection	Wear appropriate chemical resistance clothing.
Hand protection	Wear appropriate chemical resistance gloves.
Respiratory protection	Under conditions of frequent use or heavy exposure, respiratory protection may be needed Respiratory protection is ranked in order from minimum to maximum. Consider warning properties before use. Self-contained breathing apparaus.

9. PHYSICAL AND CHEMICAL PROPERTIES

a. Appearance	Solid
b. Color	clear
c. Odor	Irritating odor
d. Odor threshold	0.3 ppm
e. pH	Not applicable
f. Melting point/freezing point	52.8 °C (127 °F)
g. Initial boiling point	197 ~ 199 °C (387 ~ 390 °F)
g. Flash point	102 °C (216 °F)
i. Evaporation rate	Not applicable
j. Flammability(solid, gas)	Not applicable
k. Vapor pressure	1 mmHg at 44 °C
l. Vapor density(air=1)	3.4
m. Relative density(water=1)	1.314 at 60 °C, 1.48 at 20 °C
n. Solubility	Hydrosis
o. Auto ignition temperature	477 °C (891 °F)
p. Upper/lowew flammability or explosive limits	1.40% / 7.10%
q. Viscosity	16.1 MP/60 °C



Safety Data Sheet

Issuing Date	1996. 6.25
Page	5/7
Rev. No.	9
Rev. Date	2014. 12. 5.

r. Partition coefficient 1.62 (Estimated)

10. STABILITY AND REACTIVITY

- a. Chemical stability Stable at normal temperature and pressure. May react with evolution of heat on contact with water.
- b. Condition to avoid Avoid heat, flames, sparks and other sources of ignition. Dangerous gases may accumulate in confined spaces.
- c. Incompatible material Metal, Amine, Metal salt, Base, Combustible material, Oxidant
- d. Hazardous decomposition Thermal decomposition products : Oxides of carbon
- e. Polymerization Will not available polymerize

11. TOXICOLOGICAL INFORMATION

- a. Information on the likely routes of exposure;
- Inhalation Harmful if inhaled. Fatal to mucosal cells and airway.
- Ingestion Harmful if swallowed
- Skin contact Harmful if adsorbed through skin, Damage to skin.
- Eye Contact Direct contact with the eye may cause damage.
- b. Health Hazard
- Acute oral toxic 400 mg/Kg-Rat LD50, 875 mg/kg- Rabbit LD50
390 mg/kg-Guinea pig LD50, 465 mg/kg-Mouse LD50
- Acute dermal toxic 2,620 mg/kg-Rabbit LD50
- Acute inhalation toxic 9.8 mg/m³-Rat LC50
- Skin corrosive/irritant Rabbit - highly irritating
- Serious eye damage/eye irritation Rabbit - highly irritating
- Specific target organ toxicity (single exposure) Possible to dyspnoea, asthma, liver obstacle, nausea.
- Specific target organ toxicity (repeat exposure) Possible to edema of the lungs, upper respiratory tract irritation, throat infection, asthma.
- Genetic toxicity Result : Negative
- Toxicity to reproduction No
- Carcinogenicity
- IARC Not classification
- ACGIH A4 - Not classification(Insufficient data)
- NTP, OSHA, WISHA Not classification

12. ECOLOGICAL INFORMATION

- a. Aquatic and terrestrial ecotoxicity
- Fish 230 mg/L 48 hr LC50 *Leuciscus idus*
- Crustacea 88 mg/L 24 hr EC50 *Daphnia magna*(Crustacea)
- Aquatic plant 29 mg/L 72 hr EC50 *Algae*
- b. Persistence and degradability
- Persistence No data available
- degradability No data available



Safety Data Sheet

Issuing Date	1996. 6.25
Page	6/7
Rev. No.	9
Rev. Date	2014. 12. 5.

c. Bioaccumulative potential

Bioaccumulative No data available
Biodegradation 98 % degradation

d. Mobility in soil No data available

e. Other adverse effect No data available

13. DISPOSAL CONSIDERATION

a. Disposal method Disposal in accordance with all applicable regulation.

b. Disposal precaution Consideration to precaution all applicable regulation.

14. TRANSPORT INFORMATION

a. UN Number 2215
b. UN proper shipping name Maleic anhydride
c. Transport hazard class 8
d. Packing group(if applicable) III
e. Marine pollution No
e. Other adverse effect RQ : 5,000 lbs

15. Regulatory information

a. Korea regulations

Industrial Safety and Health Act Working environment measurement, Managed hazardous material, Exposure limit set material
Toxic chemical control Act Not applicable
Dangerous Material Safety Control Act Not applicable
Wastes Management Act Not applicable

b. U.S regulation

TSCA 12(b) : Not listed
CERCLA 103 (40 CFR 302.4) : 5,000 LBS RQ
SARA 302 (40 CFR 355.30) : N
SARA 304 (40 CFR 355.40) : N
SARA 313 (40 CFR 372.65) : MALEIC ANHYDRIDE
SARA hazard category, SARA 311/312 (40 CFR 370.21)

Acute : Yes
Chronic : No
Fire : No
Reactive : Yes
Sudden release : No

OSHA regulation (29 CFR 1910.119) : Not applicable

TSCA Listed

State Regulation California proposition 65 : N

EU Regulation R 22 Harmful if swallowed

R 34 Cause burns

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

S 2 Keep out of the reach of children.



Safety Data Sheet

Issuing Date	1996. 6.25
Page	7/7
Rev. No.	9
Rev. Date	2014. 12. 5.

S 22 Do not breathe dust.

S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

R36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

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

16. Other information

a. Information source and reference

Korea Occupational Safety Health Agency MSDS information service [Http://www.kosha.net](http://www.kosha.net)

Croner's: Dangerous Substances.

Sax's Dangerous Properties of Industrial Materials, 12th Ed.

National Institute of Technology and Evaluation, Japan <http://www.safe.nite.go.jp>

HSNO CCID, New Zealand <http://www.ermanz.govt.nz/hs/compliance/chemicals.html>

EU Directive 1999/45/EC

EU Directive 67/548/EEC

European Chemical Substances Information System <http://ecb.jrc.ec.europa.eu/esis/>

EUN Recommendations on the Transport of Dangerous Goods-Model Regulations 16th Ed.

TOXNET, U.S. National Library of Medicine <http://toxnet.nlm.nih.gov>

ECOTOX Database, EPA <http://cfpub.epa.gov/ecotox>

IMDG Code 2008 edition (Amendment 34-08), IMO

b. Issuing date

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d. Others

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