

 YONGSAN CHEMICALS	<h1>Material Safety Data Sheet</h1>	Issuing Date	1996. 6.28
		Page	1/6
		Rev. No.	7
		Rev. Date	2020. 1. 9

DL-MALIC ACID

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

a. Product name	DL-MALIC ACID
b. Recommend use of the chemical	Food Additive
c. Restriction on use	For applicable
d. Manufacture Information	
Factory	Yongsan Chemicals, Inc. 32, Sapyeong-ro, Nam-gu, Ulsan, Korea 82-52 - 226 - 8800 Safety Environment Team
HEAD OFFICE	82-2-3274-9100

2. HAZARD IDENTIFICATION

a. Hazard-Risk Classification	Skin corrosion/irritation-Category 2 Serious eye damage/irritatin-Category 2
-------------------------------	---------------------------------------------------------------------------------

b. Label elements including precautionary statements

Symbol



Signal word Warning

Hazard statement

H315	Cause skin irritation.
H319	Cause serious eye irritation.

Precaution statement

Precaution

P264	Wash hands thoroughly after handling
P280	Wear protective gloves/protective clothing/eye protection/face protection

Response

P321	Specific treatment (see ... on this label)
P330	Rinse mouth
P362+P364	Take off immediately contaminated clothing and wash before reuse
P301+P312	If swallowed : Immediately call a poison center or doctor/physician if you feel unwell.
P302+P352	If on skin : Wash with plenty of water.
P332+P313	If skin irritation occurs: Get medical advice/attention.
P337+P313	If eye irritation persists: Get medical advice/attention.
P305+P351+P338	If in eyes : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

 YONGSAN CHEMICALS	<h1>Material Safety Data Sheet</h1>	Issuing Date	1996. 6.28
		Page	2/6
		Rev. No.	7
		Rev. Date	2020. 1. 9

Storage

-

Disposal

P501

Dispose of contents/container to local regulation.

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

Heath	1
Fire	1
Reactivity	0

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Other name	CAS Number	EN Number	Content (%)
DL-Malic acid	Butanedioic acid, hydroxy-	617-48-1	210-514-9	Min. 99.5
		6915-15-7	230-022-8	
Others	-	-	-	Max. 0.5

4. FIRST AID MEASURE

- | | |
|-----------------|--------------------------------------------------------------------------------------------------------------|
| a. Inhalation | Move from exposure immediately if adverse effect.
If breathing has stopped, apply artificial respiration. |
| b. Skin contact | Remove contaminated clothings and shoes.
Immediately wash with soap and water for at least 15 minutes. |
| c. Ingestion | Get medical attention if ingested much. |
| d. Eye contact | Irrigate exposed eye with coupious amounts of room temperature water 15 minutes. |

5. FIRE-FIGHTING METHOD

- | | |
|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| a. Extinguish media | Dry chemical, Carbon dioxide, Water, Foam |
| b. Specific hazards arising from the chemical | |
| Pyrosis product | Oxides of carbon |
| Fire and explosion hazards | Slight fire hazard |
| c. Specific protective equipment and precaution for fire-fighter | Move container from fire area if it can be done without risk
Do not scatter spiled material with high-pressure.
Dike for later disposal
Use extinguish agents appropriate for surrounding fire.
Avoid inhalation of material or combustion by-products.
Stay upwind and keep out of low areas. |

6. Accidental release measure

- | | |
|-----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| a. Personal precaution, protective equipment and emergency procedures | |
| | Keep unnecessary people away, isolate hazard area
Wear appropriate personel protective equipment. |



Material Safety Data Sheet

Issuing Date	1996. 6.28
Page	3/6
Rev. No.	7
Rev. Date	2020. 1. 9

Ventillate spills
 Wear protective equipment with self contained breathing apparatus.
 Stop leak if possible without personal risk.

b. Environment precaution and protective procedure

Air Use adequate ventilation.
 Soil Dike for later disposal
 Water Collect spilled material in appropriate container for later disposal.

c. Methods and material for containment and cleaning up

Small spills Keep unnecessary people away, isolate hazard area
 Collect spilled material in appropriate container for later disposal.
 Keep separated from water and sewer.
 large spills Collect spilled material in appropriate container for disposal.
 Keep away from ignition source.

7. HANDLING AND STORAGE

Storage Store in cool/dry place. Store in a well-ventillated place.
 Store and handle in accordance with all current regulations and standards.
 Handling Remove contaminated clothing and wash clothing before reuse.

8. Exposure controls and personal protection.

a. Control parameter

National regulation No occupational exposure limits established
 ACGIH regulation No applicable data

b. Ventillation

Provide local exhaust ventillation system. Maintainging an appropriate wind speed.
 Ventillationequipment should be expasion-resistant if explosive concentrations of material are present.

c. Personal protective equipment

Respiratory protection Wear certified(KOSHA) respirator protection.
 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.

9. PHYSICAL AND CHEMICAL PROPERTIES

a. Appearance Solid
 b. Color White
 c. Odor No
 d. Odor threshold No data available
 e. pH No data available
 f. Melting point/freezing point 127~132°C
 g. Initial boiling point No data available
 h. Flash point No data available



Material Safety Data Sheet

Issuing Date	1996. 6.28
Page	4/6
Rev. No.	7
Rev. Date	2020. 1. 9

- i. Evaporation rate No data available
- j. Flammability(solid, gas) No data available
- k. Vapor pressure No data available
- l. Vapor density(air=1) No data available
- m. Relative density(water=1) No data available
- n. Solubility 61%(30℃ Water)
- o. Auto ignition temperature No data available
- p. Upper/lowew flammability or explosive limits No data available
- q. Viscosity No data available
- r. Partition coefficient No data available

10. STABILITY AND REACTIVITY

- a. Chemical stability Stable at normal temperature and pressure.
- b. Condition to avoid Avoid heat, flames, sparks and other sources of ignition. Avoid contact with incompatible material.
- c. Incompatible material No data available
- d. Hazardous decomposition No data available

11. TOXICOLOGICAL INFORMATION

- a. Information on the likely routes of exposure; Not applicable data.
- b. Health Hazard
 - Acute oral toxic 1,600 ~ 3200 mg/Kg - Rat - LD50
 - Acute dermal toxic No data available
 - Acute inhalation toxic No data available
 - Skin corrosive/irritant Irritating
 - Serious eye damage/eye irritation Irritating eye, Rabbit. 750ug/24hr
 - Specific target organ toxicity (single exposure) No data available
 - Specific target organ toxicity (repeat exposure) No data available
 - Genetic toxicity No data available
 - Toxicity to reproduction No data available
 - Carcinogenicity
 - IARC Not applicable
 - ACGIH Not applicable
 - NTP, OSHA, WISHA Not applicable

12. ECOLOGICAL INFORMATION

- a. Aquatic and terrestrial ecotoxicity
 - Fish No data available
 - Crustacea LC50 586000mg/l 48hr(ECOSAR Class:Neutral Organic-acid)
 - Aquatic plant EC50 - 56282.71 mg/l 96 hr (ECOSAR Class:Neutral Organic-acid)
- b. Persistence and degradability



Material Safety Data Sheet

Issuing Date	1996. 6.28
Page	5/6
Rev. No.	7
Rev. Date	2020. 1. 9

Persistence	log Kow -1.26
degradability	Not applicable data
c. Bioaccumulative potential	
Bioaccumulative	BCF 3.162
Biodegradation	(Cut-off value = 0.8354 : Rapidly degradation(BIOWIN 5))
d. Mobility in soil	Koc 0.1115
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	No data available
b. UN proper shipping name	No data available
c. Transport hazard class	No data available
d. Packing group(if applicable)	No data available
e. Marine pollution	No data available
f. Special precaution	No data available

15. Regulatory information

a. Korea regulations	
Industrial Safety and Health Act	Not applicable
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)	: No
SARA 313 (40 CFR372.65)	: No
SARA 302 (40 CFR 355.30)	: No
SARA 304 (40 CFR 355.40)	: No
OSHA (29 CFR 1910.119)	: No
TSCA	Listed
c. EU regulation	No data available
d. EU 1907/2006	Registration (Certification No. R2018020310002)

16. Other information

a. Information source and reference

Korea Occupational Safety Health Agency MSDS information service <http://www.kosha.or.kr>

Yongsan Chemicals, INC.

 YONGSAN CHEMICALS	<h2>Material Safety Data Sheet</h2>	Issuing Date	1996. 6.28
		Page	6/6
		Rev. No.	7
		Rev. Date	2020. 1. 9

b. Issuing date

28.. June. 1996.

c. Revision number/date

Revision 7 / 9. January. 2020.

d. Others

The information in this Safety Data Sheet is based on data and information currently available.

Use the information contained in the safety data sheet only as a reference for the safe handling of the material.

Our company does not guarantee the contents described in the safety data sheet.