



Malic acid

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND THE COMPANY/UNDERTAKING

Product name:	Malic Acid
Chemical name:	DL Malic Acid
Chemical formula:	C ₄ H ₆ O ₅
Type of product:	Pure product
Use of the Substance/Mixture:	See section 7.3
Company identification:	See footer
Emergency phone number:	Anti-poison centre Brussels: +32(0)70/245.245

2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture


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

Eye irrit. 2	Causes serious eye irritation.
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Classification according to Directive 67/548/EC and Directive 1999/45/EC

Xi	Irritating to eyes.
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2.2. Label elements according to CLP Regulation (EC) 1272/2008

Product name	Malic Acid.
Hazard pictogram(s)	 GHS07
Signal word(s)	Warning.
Hazard statement(s)	H319 – Causes serious eye irritation.



Precautionary statement(s)	P264 – Wash hands thoroughly after handling.
	P280 – Wear protective gloves/protective clothing/eye protection/face protection.
	P305+P351+P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
	P337+P313 – If eye irritation persists: Get medical advice/attention.

2.3. Other hazards
None.

2.4. Additional information
None.

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances					
EC classification 1272/2008					
Hazardous ingredient(s)	%W/W	CAS No.	EC No.	REACH Registration No.	Hazard pictogram(s) and Hazard statement(s)
DL-Malic Acid	≥99	617-48-1	210-514-9	01-2119552463-40-0001	GHS07, Eye Irrit. 2; H319
EC Classification 67/548/EEC					
Hazardous ingredient(s)	%W/W	CAS No.	EC No.	REACH Registration No.	Hazard pictogram(s) and Hazard statement(s)
DL-Malic Acid	≥99	617-48-1	210-514-9	01-2119552463-40-0001	Xi; R36

3.2. Additional information
For full text of H/P phrases see section 16.

**4. FIRST AID MEASURES****4.1. Description of first aid measures**

Inhalation	In case of accident by inhalation remove casualty to fresh air and keep at rest.
Skin contact	Wash affected skin with plenty of water.
Eye contact	IF IN EYES: Rinse cautiously with water for several minutes. Remove lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
Ingestion	Wash out mouth with water.

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

Unlikely to be required but if necessary treat symptomatically.

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

No special requirements.

5. FIRE-FIGHTING MEASURES**5.1. Extinguishing media**

Suitable extinguishing media	Extinguish with carbon dioxide, dry chemical, foam or waterspray.
Unsuitable extinguishing media	None known.

5.2. Special hazards arising from the substance or mixture.

Toxic fumes may be produced in a fire.

**5.3. Advice for firefighters**

Fire fighters should wear complete protective clothing including self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES**6.1. Personal precautions, protective equipment and emergency procedures**

Ensure adequate ventilation. Ensure suitable personal protection during removal of spillages. Avoid generation of dust. Avoid breathing dust.

6.2. Environmental precautions

Avoid run off to waterways and sewers.

6.3. Methods and material for containment and cleaning up

Sweep spilled substances into containers if appropriate. Moisten first to prevent dusting. Use vacuum equipment for collecting spilt materials, where practicable. Transfer to a container for disposal.

6.4. Reference to other sections

See also Section 8, 13.

7. HANDLING AND STORAGE**7.1. Precautions for safe handling**

Provide adequate ventilation. Avoid contact with eyes. Wear protective gloves/protective clothing/eye protection/face protection. Wash hands thoroughly after handling.



7.2. Conditions for safe storage, including any incompatibilities

Keep container tightly closed and in a well-ventilated place.

Storage temperature	Ambient
Storage life	Stable under normal conditions
Incompatible materials	Alkaline, Oxidizing agents, Reducing agent, Alkali metals.

7.3. Specific end use(s)

Formulation	Coatings and inks
	Water treatment and washing and cleaning products
	SpERC: Cosmetics Europe/ AISE 2.3b. V2 – (medium scale)
	Dyestuff and textiles use
	SpERC: Cosmetics Europe/ AISE 2.1b. V2 – (medium scale)
	Construction products
	Formulation of liquid mixtures (general)
Industrial	Use at industrial sites in construction products
	General industrial use in production of polymers and resins
	Use at industrial sites of water treatment washing and cleaning products
	Use at industrial sites of dyestuffs and in textiles uses
	General industrial use of coatings and inks
	Use at industrial site: Intermediate
	Industrial use of metal treatment products
Professional	Professional creation of building materials and articles
	Professional use in water treatment and cleaning products
	Laboratory use (professional worker)
	Professional use of resins
	Professional painting and coatings
Consumer	Consumer building product use
	Consumer water treatment and cleaning product use
	Consumer painting and coatings
	Consumer resin use






	Consumer cosmetics, pharmaceuticals and personal care products
Other	Service life articles used by consumers
	Service life articles used by workers

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Occupational exposure limits	None		
Biological limit value	No information available.		
DNEL	Oral	Inhalation	Dermal
Industry - Long Term - Local effects	-	32 mg/m ³	1 mg/cm ²
Industry - Long Term - Systemic effects	-	5.33 mg/m ³	2 mg/kg
Consumer - Long Term - Local effects	-	1.6 mg/m ³	0.5 mg/cm ²
Consumer - Long Term - Systemic effects	6 mg/kg	1.6 mg/m ³	6 mg/kg
	PNEC		
Aquatic compartment - Fresh water	0.1 mg/L		
Marine compartment	0.01 mg/L		
Aquatic compartment - sediment	-		
Marine compartment - sediment	-		
Terrestrial compartment	-		
Sewage treatment plant - microorganisms	3 mg/L		
Atmospheric compartment	-		



8.2. Exposure controls	
Appropriate engineering controls	Provide adequate ventilation, including appropriate local extraction if dusts, fumes or vapours are likely to be evolved.
Individual protection measures, such as personal protective equipment	
- Eye/face protection	Wear protective eyewear (goggles, face shield, or safety glasses). 
- Skin protection (Hand protection/Other)	Wear impervious gloves (EN374). 
- Respiratory protection	Normally no personal respiratory protection is necessary. 
- Thermal hazards	Not applicable.
Environmental exposure controls	Avoid run off to waterways and sewers.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties	
Appearance	White, Crystalline, Solid
Odour	Odourless
Odour Threshold	Not established
pH	~2.3 @ 10 g/L water
Melting point/Freezing point	129°C



Initial boiling point and boiling range	150°C
Flash point	203°C
Evaporation rate	Not applicable
Flammability (solid, gas)	Non-flammable
Upper/lower flammability or explosive limits	Not applicable
Vapour pressure	0.0004 Pa
Vapour density	Not applicable
Relative density	1.6 @ 20°C
Solubility(ies)	500 g/L @ 25°C
Partition coefficient: n-octanol/water	Log P: 1.6
Auto-ignition temperature	Not available
Decomposition temperature	Not available
Viscosity	Not applicable
Explosive properties	Not explosive
Oxidising properties	Not oxidizing

9.2. Other information

Bulk density	Untapped: 0.74-0.75 g/cm ³
	Tapped: 0.79-0.80 g/cm ³
Granulometry	Very low inhalable fraction, <12% (wt)
	Under atmospheric conditions, water will be attracted to the substance, leading to caking.
Dissociation constant	pKa: 3.3 @ 20°C

10. STABILITY AND REACTIVITY

10.1. Reactivity	Stable under normal conditions.
10.2. Chemical stability	Stable under normal conditions.



10.3. Possibility of hazardous reactions	Stable under normal conditions.
10.4. Conditions to avoid	Keep away from moisture.
10.5. Incompatible materials	Alkaline, Oxidizing agents, Reducing agent, Alkali metals.
10.6. Hazardous decomposition products	Carbon monoxide, Carbon dioxide.

11. TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Acute toxicity	Low acute toxicity.
Skin corrosion/irritation	Not classified.
Serious eye damage/irritation	Eye irrit. 2; Cause serious eye irritation.
Respiratory or skin sensitization	Not classified.
Germ cell mutagenicity	There is no evidence of mutagenicity potential.
Carcinogenicity	No evidence of carcinogenicity.
Reproductive toxicity	Not classified.
STOT – single exposure	Not classified.
STOT – repeated exposure	Not classified.
Aspiration hazard	None anticipated.

11.2. Other information

None.



12. ECOLOGICAL INFORMATION

12.1. Toxicity	Low toxicity to aquatic organisms
12.2. Persistence and degradability	Readily biodegradable, non-persistent
12.3. Bioaccumulative potential	The substance has low potential for bioaccumulation
12.4. Mobility in soil	The substance is soluble in water. The substance is predicted to have high mobility in soil.
12.5. Results of PBT and VPVB assessment	Not classified as PBT or vPvB
12.6. Other adverse effects	None known

13. DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods	Dispose at suitable refuse site
13.2. Additional information	Disposal should be in accordance with local, state or national legislation.

14. TRANSPORTATION INFORMATION

Not classified as dangerous.	
14.1. UN number	Not applicable.
14.2. UN Proper Shipping Name	Not applicable.
14.3. Transport hazard class(es)	Not applicable.
14.4. Packing Group	Not applicable.



14.5. Environmental hazards	Not applicable.
14.6. Special precautions for user	Not applicable.
14.7. Transport in bulk according to Annex II of MARPOL73/76 and the IBC Code	Not applicable.

15. REGULATORY INFORMATION

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

EU regulations – Authorizations and/or restrictions on use	
- Candidate List of Substances of Very High Concern for Authorization	Not listed
- REACH: ANNEX XIV List of substances subject to authorization	Not listed
- REACH: ANNEX XVII Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles	Not listed
- Community Rolling Action Plan (CoRAP)	Not listed
National regulations	None known

15.2. Chemical Safety Assessment

Available



16. OTHER INFORMATION

Legend	
LTEL	Long Term Exposure Limit
STEL	Short Term Exposure Limit
STOT	Specific Target Organ Toxicity
DNEL	Derived No Effect Level
PNEC	Predicted No Effect Concentration
PBT	Persistent, Bioaccumulative and Toxic
vPvB	Very Persistent and very Bioaccumulative
Eye Irrit. 2	Serious eye damage/irritation Category 2
Xi	Irritant
Risk Phrases	
R36	Irritating to eyes
Hazard Statement(s)	
H319	Causes serious eye irritation