

Safety Data Sheet

according to Regulation (EC) No 1907/2006

Äpfelsäure E 296

Revision: 11.04.2025

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SECTION 1: Identification of the substance/mixture and of the company/undertaking**1.1. Product identifier**

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Substance name: DL-malic acid
REACH Registration Number: 01-2119552463-40-XXXX
CAS No: 617-48-1
EC No: 210-514-9

1.2. Relevant identified uses of the substance or mixture and uses advised against**Use of the substance/mixture**

Chemical raw material

Uses advised against

Any non-intended use.

1.3. Details of the supplier of the safety data sheet

Company name: DistrEbution GmbH
Street: Brookdeich 40
Place: D-21029 Hamburg
Telephone: +49 (406) 09238760 Telefax: +49 (406) 09238789
E-mail: info@distrebution.com
Internet: https://www.distrebution.com/

1.4. Emergency telephone number:

Only from Malta: 112

Further Information

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (amended by Regulation (EU) No 2020/878)

SECTION 2: Hazards identification**2.1. Classification of the substance or mixture****Regulation (EC) No 1272/2008**

Eye Irrit. 2; H319

Full text of hazard statements: see SECTION 16.

2.2. Label elements**Regulation (EC) No 1272/2008****Signal word:** Warning**Pictograms:****Hazard statements**

H319 Causes serious eye irritation.

Precautionary statements

P264 Wash hands thoroughly after handling.
P280 Wear protective gloves/protective clothing and 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

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This substance does not meet the PBT/vPvB criteria of REACH, Annex XIII.

This substance does not have endocrine disrupting properties with respect to humans. This substance does not have endocrine disrupting properties with respect to non-target organisms.

SECTION 3: Composition/information on ingredients**3.1. Substances**

Sum formula: C₄H₆O₅
Molecular weight: 134,1 g/mol

Relevant ingredients

CAS No	Chemical name			Quantity
	EC No	Index No	REACH No	
	Classification (Regulation (EC) No 1272/2008)			
617-48-1	DL-malic acid			90 - 100 %
	210-514-9		01-2119552463-40-XXXX	
	Eye Irrit. 2; H319			

Full text of H and EUH statements: see section 16.

Specific Conc. Limits, M-factors and ATE

CAS No	EC No	Chemical name	Quantity
		Specific Conc. Limits, M-factors and ATE	
617-48-1	210-514-9	DL-malic acid	90 - 100 %
		inhalation: LC ₅₀ = > 1,306 mg/l (dusts or mists); dermal: LD ₅₀ = >2000 mg/kg; oral: LD ₅₀ = 10700 mg/kg	

Further Information

Product does not contain listed SVHC substances > 0,1 % according to Regulation (EC) No. 1907/2006 Article 59 (REACH)

SECTION 4: First aid measures**4.1. Description of first aid measures****General information**

In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

After inhalation

In case of accident by inhalation: remove casualty to fresh air and keep at rest. In case of respiratory tract irritation, consult a physician.

After contact with skin

Gently wash with plenty of soap and water. In case of skin irritation, seek medical treatment.

After contact with eyes

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. In case of troubles or persistent symptoms, consult an ophthalmologist.

After ingestion

Rinse mouth thoroughly with water. Let water be drunken in little sips (dilution effect). Do NOT induce vomiting. In all cases of doubt, or when symptoms persist, seek medical advice.

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

Symptoms include: B.: Vomiting, irritation, cough, shortness of breath.

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

Treat symptomatically.

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SECTION 5: Firefighting measures**5.1. Extinguishing media****Suitable extinguishing media**

Carbon dioxide (CO₂). Dry extinguishing powder. Alcohol resistant foam. Water fog.

Unsuitable extinguishing media

High power water jet.

5.2. Special hazards arising from the substance or mixture

In case of fire may be liberated: Carbon dioxide (CO₂). Carbon monoxide (CO).

5.3. Advice for firefighters

In case of fire: Wear self-contained breathing apparatus.

Additional information

Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water.

Co-ordinate fire-fighting measures to the fire surroundings.

SECTION 6: Accidental release measures**6.1. Personal precautions, protective equipment and emergency procedures****General advice**

Avoid dust formation.

Do not breathe dust.

For non-emergency personnel

Wear personal protection equipment (refer to section 8).

For emergency responders

No special measures are necessary.

6.2. Environmental precautions

Discharge into the environment must be avoided.

6.3. Methods and material for containment and cleaning up**For containment**

Take up mechanically.

Treat the recovered material as prescribed in the section on waste disposal.

For cleaning up

Clean contaminated objects and areas thoroughly observing environmental regulations.

6.4. Reference to other sections

Safe handling: see section 7

Personal protection equipment: see section 8

Disposal: see section 13

SECTION 7: Handling and storage**7.1. Precautions for safe handling****Advice on safe handling**

Wear personal protection equipment (refer to section 8).

Advice on protection against fire and explosion

Usual measures for fire prevention. Dust clouds may present an explosion hazard.

Advice on general occupational hygiene

Always close containers tightly after the removal of product. When using do not eat, drink or smoke. Wash hands before breaks and after work.

Further information on handling

Avoid generation of dust.

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General protection and hygiene measures: refer to section 8

7.2. Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels

Keep container tightly closed in a cool, well-ventilated place.

Hints on joint storage

Do not store together with: Explosives. Oxidizing solids. Oxidizing liquids. Radioactive substances. Infectious substances. Food and animal feedingstuff.

Further information on storage conditions

Keep the packing dry and well sealed to prevent contamination and absorption of humidity.

Recommended storage temperature: 20 °C

Protect against: frost. UV-radiation/sunlight. heat. Humidity

7.3. Specific end use(s)

See section 1.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

DNEL/DMEL values

CAS No	Name of agent			
DNEL type		Exposure route	Effect	Value
617-48-1	DL-malic acid			
Worker DNEL, long-term		inhalation	systemic	5,33 mg/m³
Worker DNEL, acute		inhalation	systemic	104 mg/m³
Worker DNEL, long-term		inhalation	local	32 mg/m³
Worker DNEL, acute		inhalation	local	104 mg/m³
Worker DNEL, long-term		dermal	systemic	2 mg/kg bw/day
Worker DNEL, acute		dermal	systemic	40 mg/kg bw/day
Worker DNEL, long-term		dermal	local	1 mg/cm²
Worker DNEL, acute		dermal	local	1 mg/cm²
Consumer DNEL, long-term		inhalation	systemic	1,6 mg/m³
Consumer DNEL, acute		inhalation	systemic	52 mg/m³
Consumer DNEL, long-term		inhalation	local	1,6 mg/m³
Consumer DNEL, acute		inhalation	local	52 mg/m³
Consumer DNEL, long-term		dermal	systemic	6 mg/kg bw/day
Consumer DNEL, acute		dermal	systemic	20 mg/kg bw/day
Consumer DNEL, long-term		dermal	local	0,5 mg/cm²
Consumer DNEL, acute		dermal	local	0,4 mg/cm²
Consumer DNEL, long-term		oral	systemic	6 mg/kg bw/day
Consumer DNEL, acute		oral	systemic	20 mg/kg bw/day

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PNEC values

CAS No	Name of agent	
Environmental compartment		Value
617-48-1	DL-malic acid	
Freshwater		0,1 mg/l
Freshwater (intermittent releases)		1 mg/l
Marine water		0,01 mg/l
Micro-organisms in sewage treatment plants (STP)		3 mg/l

Additional advice on limit values

To date, no national critical limit values exist.

8.2. Exposure controls**Appropriate engineering controls**

Technical measures and the application of suitable work processes have priority over personal protection equipment.

Dust must be exhausted directly at the point of origin.

Individual protection measures, such as personal protective equipment**Eye/face protection**

Dust protection goggles.

Hand protection

Wear suitable gloves.

Suitable material:

FKM (fluororubber). - Thickness of glove material: 0,4 mm

Breakthrough time $\geq$ 8 h

Butyl rubber. - Thickness of glove material: 0,5 mm

Breakthrough time $\geq$ 8 h

CR (polychloroprenes, Chloroprene rubber). - Thickness of glove material: 0,5 mm

Breakthrough time $\geq$ 8 h

NBR (Nitrile rubber). - Thickness of glove material: 0,35 mm

Breakthrough time $\geq$ 8 h

PVC (Polyvinyl chloride). - Thickness of glove material: 0,5 mm

Breakthrough time $\geq$ 8 h

For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

The selected protective gloves have to satisfy the specifications of EU Directive EC/ 2016/425 and the standard EN 374 derived from it.

Check leak tightness/impermeability prior to use. In the case of wanting to use the gloves again, clean them before taking off and air them well.

Skin protection

Suitable protective clothing: Lab apron.

Respiratory protection

With correct and proper use, and under normal conditions, breathing protection is not required.

Respiratory protection necessary at:

-Exceeding exposure limit values

-Generation/formation of dust

Suitable respiratory protection apparatus: particulates filter device (DIN EN 143). Type:: P2

Half-face mask or quarter facepiece: maximum use concentration for substances with exposure limits: P1 filter:

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up to a max. of 4 times the exposure limit. P2 filter: up to a max. of 10 times the exposure limit. P3 filter: up to a max. of 30 times the expo.

The filter class must be suitable for the maximum contaminant concentration (gas/vapour/aerosol/particulates) that may arise when handling the product. If the concentration is exceeded, self-contained breathing apparatus must be used.

Thermal hazards

Material handled at elevated temperature may cause thermal burns by contact with molten product.

Environmental exposure controls

Do not allow uncontrolled discharge of product into the environment.

SECTION 9: Physical and chemical properties**9.1. Information on basic physical and chemical properties**

Physical state:	solid
Colour:	white
Odour:	odourless
Odour threshold:	not determined
Melting point/freezing point:	131 °C
Boiling point or initial boiling point and boiling range:	150 °C
Flammability:	not determined
Lower explosion limits:	not relevant
Upper explosion limits:	not relevant
Flash point:	not relevant
Auto-ignition temperature:	not relevant
Decomposition temperature:	not relevant
pH-Value:	not determined
Viscosity / kinematic:	not relevant
Water solubility: (at 20 °C)	646,6 g/l
Solubility in other solvents	not determined
Dissolution rate:	not relevant
Partition coefficient n-octanol/water:	-1,27 (pH 2,3, 24°C)
Dispersion stability:	not relevant
Vapour pressure: (at 25 °C)	0 hPa
Density (at 20 °C):	1,615 g/cm ³
Bulk density:	not determined
Relative vapour density:	not relevant
Particle characteristics:	not determined

9.2. Other information**Information with regard to physical hazard classes****Explosive properties**

Dust clouds may present an explosion hazard.

Sustained combustibility:

No sustained combustibility

Self-ignition temperature

Solid:

not determined

Oxidizing properties

none

Other safety characteristics**Evaporation rate:**

not determined

Solvent separation test:

not determined

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Solvent content:	not determined
Sublimation point:	not relevant
Softening point:	not relevant
Pour point:	not relevant
Viscosity / dynamic:	not relevant
Flow time:	not relevant

Further Information

No information available.

SECTION 10: Stability and reactivity**10.1. Reactivity**

No information available.

10.2. Chemical stability

The product is chemically stable under recommended conditions of storage, use and temperature.

10.3. Possibility of hazardous reactions

No hazardous reaction when handled and stored according to provisions.

Danger of dust explosion.

Refer to section 10.5.

10.4. Conditions to avoid

Protect against: UV-radiation/sunlight. heat. Avoid dust formation.

10.5. Incompatible materials

Materials to avoid: Oxidising agent, strong. Reducing agents, strong.

10.6. Hazardous decomposition productsCarbon monoxide Carbon dioxide (CO₂)**SECTION 11: Toxicological information****11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008****Toxicokinetics, metabolism and distribution**

No data available.

Acute toxicity

Based on available data, the classification criteria are not met.

CAS No	Chemical name				
	Exposure route	Dose	Species	Source	Method
617-48-1	DL-malic acid				
	oral	LD50 mg/kg	10700	Rat	Publication (1977) OECD Guideline 401
	dermal	LD50 mg/kg	>2000	Rat.	MSDS extern
	inhalation (4 h) dust/mist	LC50 mg/l	> 1,306	Rat	Study report (2010) OECD Guideline 403

Irritation and corrosivity

Serious eye damage/eye irritation: Causes serious eye irritation.

Skin corrosion/irritation: Based on available data, the classification criteria are not met.

Sensitising effects

Based on available data, the classification criteria are not met.

Carcinogenic/mutagenic/toxic effects for reproduction

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Germ cell mutagenicity: Based on available data, the classification criteria are not met.

Carcinogenicity: Based on available data, the classification criteria are not met.

Reproductive toxicity: Based on available data, the classification criteria are not met.

STOT-single exposure

Based on available data, the classification criteria are not met.

STOT-repeated exposure

Based on available data, the classification criteria are not met.

Aspiration hazard

Based on available data, the classification criteria are not met.

Specific effects in experiment on an animal

No data available.

11.2. Information on other hazards**Endocrine disrupting properties**

This substance does not have endocrine disrupting properties with respect to humans.

Other information

No data available.

SECTION 12: Ecological information**12.1. Toxicity**

Based on available data, the classification criteria are not met.

CAS No	Chemical name					
	Aquatic toxicity	Dose	[h] [d]	Species	Source	Method
617-48-1	DL-malic acid					
	Acute fish toxicity	LC50 > 100 mg/l	96 h	Danio rerio	Study report (2010)	OECD Guideline 203
	Acute algae toxicity	ErC50 > 100 mg/l	72 h	Raphidocelis subcapitata	Study report (2010)	OECD Guideline 201
	Acute crustacea toxicity	EC50 ca. 240 mg/l	48 h	Daphnia sp.	Publication (1989)	
	Acute bacteria toxicity	EC50 > 300 mg/l ()	3 h	activated sludge of a predominantly domestic sewage	Study report (2010)	OECD Guideline 209

12.3. Bioaccumulative potential**Partition coefficient n-octanol/water**

CAS No	Chemical name	Log Pow
617-48-1	DL-malic acid	-1,27

12.4. Mobility in soil

No data available.

12.5. Results of PBT and vPvB assessment

This substance does not meet the PBT/vPvB criteria of REACH, annex XIII.

The aforementioned statement applies to substances contained in the product with a minimum content of 0.1%.

12.6. Endocrine disrupting properties

This substance does not have endocrine disrupting properties with respect to non-target organisms.

The aforementioned statement applies to substances contained in the product with a minimum content of 0.1%.

12.7. Other adverse effects

No data available.

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Further information

Do not allow to enter into surface water or drains.

SECTION 13: Disposal considerations**13.1. Waste treatment methods****Disposal recommendations**

Observe in addition any national regulations! Consult the local waste disposal expert about waste disposal.

Non-contaminated packages may be recycled.

According to (EWC) European Waste Catalogue, allocation of waste identity numbers/waste descriptions must be carried out in a specific way for every industry and process.

Control report for waste code/ waste marking according to (EWC) European Waste Catalogue:

List of Wastes Code - contaminated packaging

150110 WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED; packaging (including separately collected municipal packaging waste); packaging containing residues of or contaminated by hazardous substances; hazardous waste

Contaminated packaging

Handle contaminated packages in the same way as the substance itself.

SECTION 14: Transport information**Land transport (ADR/RID)**

14.1. UN number or ID number:	No dangerous good in sense of this transport regulation.
14.2. UN proper shipping name:	No dangerous good in sense of this transport regulation.
14.3. Transport hazard class(es):	No dangerous good in sense of this transport regulation.
14.4. Packing group:	No dangerous good in sense of this transport regulation.

Inland waterways transport (ADN)

14.1. UN number or ID number:	No dangerous good in sense of this transport regulation.
14.2. UN proper shipping name:	No dangerous good in sense of this transport regulation.
14.3. Transport hazard class(es):	No dangerous good in sense of this transport regulation.
14.4. Packing group:	No dangerous good in sense of this transport regulation.

Marine transport (IMDG)

14.1. UN number or ID number:	No dangerous good in sense of this transport regulation.
14.2. UN proper shipping name:	No dangerous good in sense of this transport regulation.
14.3. Transport hazard class(es):	No dangerous good in sense of this transport regulation.
14.4. Packing group:	No dangerous good in sense of this transport regulation.

Air transport (ICAO-TI/IATA-DGR)

14.1. UN number or ID number:	No dangerous good in sense of this transport regulation.
14.2. UN proper shipping name:	No dangerous good in sense of this transport regulation.
14.3. Transport hazard class(es):	No dangerous good in sense of this transport regulation.
14.4. Packing group:	No dangerous good in sense of this transport regulation.

14.5. Environmental hazards

ENVIRONMENTALLY HAZARDOUS: No

14.6. Special precautions for user

refer to section 6 - 8

14.7. Maritime transport in bulk according to IMO instruments

not relevant

SECTION 15: Regulatory information**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**

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EU regulatory information

Directive 2010/75/EU on industrial emissions:

No information available.

Directive 2004/42/EC on VOC in paints and varnishes:

No information available.

Information according to Directive 2012/18/EU (SEVESO III):

Not subject to 2012/18/EU (SEVESO III)

Additional information

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This substance is hazardous in the sense of regulation (EC) No 1272/2008 (CLP).

REACH 1907/2006 Appendix XVII, No.: -

National regulatory information

Employment restrictions:

Observe restrictions to employment for juveniles according to the 'juvenile work protection guideline' (94/33/EC).

Water hazard class (D):

1 - slightly hazardous to water

15.2. Chemical safety assessment

For this substance a chemical safety assessment has not been carried out.

SECTION 16: Other information**Changes**

Rev. 1,0; Initial release: 11.04.2025

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Abbreviations and acronyms

Eye Irrit. 2: Eye irritation, hazard category 2

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

CAS: Chemical Abstracts Service

CLP: Classification, Labelling and Packaging of substances and mixtures

DNEL: Derived No Effect Level

d: day(s)

EINECS: European INventory of Existing Commercial chemical Substances

ELINCS: European List of Notified Chemical Substances

ECHA: European Chemicals Agency

EWC: European Waste Catalogue

IARC: INTERNATIONAL AGENCY FOR RESEARCH ON CANCER

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)

ICAO: International Civil Aviation Organization

ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

GefStoffV: Gefahrstoffverordnung (Ordinance on Hazardous Substances, Germany)

h: hour

LOAEL: Lowest observed adverse effect level

LOAEC: Lowest observed adverse effect concentration

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

NOAEL: No observed adverse effect level

NOAEC: No observed adverse effect concentration

NLP: No-Longer Polymers

N/A: not applicable

OECD: Organisation for Economic Co-operation and Development

PNEC: predicted no effect concentration

PBT: Persistent bioaccumulative toxic

RID: Regulation Concerning the International Transport of Dangerous Goods by Rail

REACH: Registration, Evaluation, Authorisation of Chemicals

SVHC: substance of very high concern

TRGS: Technische Regeln für Gefahrstoffe

UN: United Nations

VOC: Volatile Organic Compounds

WGK: Water Hazard Class (Germany)

Relevant H and EUH statements (number and full text)

H319 Causes serious eye irritation.

Further Information

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.