

MALIC ACID, DL GRADE

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SECTION 1: IDENTIFICATION

1.1 GHS Product identifier:

MALIC ACID, DL GRADE
DL-Malic acid; 2-Hydroxybutanedioic acid; Hydroxysuccinic acid
CAS: 6915-15-7

Other means of identification:

Not relevant

1.2 Recommended use of the chemical and restrictions on use:

Relevant uses: Food acidulant and flavour enhancer, beverage and confectionery manufacture, pharmaceutical excipient, cosmetic formulations, buffering/chelating agent in industrial processes. For industrial/commercial user only.
Uses advised against: All uses not specified in this section or in section 7.3.

1.3 Supplier's details:

SURAJ CHEMICALS
No 92, Govindappa Naicken Street, Shiva Complex, Chennai – 600001, Tamil Nadu, India
Tel: +91 - 7092722822, +91 - 9840284032 / +91 - 44 - 25393652, 42130281
Email: sales@surajchemicals.com | Website: www.surajchemicals.com
GST No: 33ACEPV8190L1ZZ

1.4 Emergency phone number:

Emergency Contact No: +91 - 7092722822, +91 - 9840284032

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture:

GHS:
Classification of this product has been carried out in accordance with the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Not classified	Not classified as hazardous under GHS criteria based on available data
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Malic acid is a naturally occurring food-grade organic acid widely used as a food additive (EU No. E296). It is not classified as hazardous to health, physical hazards, or the environment under standard GHS criteria. Concentrated dust or solutions may cause mild, transient irritation (see Section 11).

2.2 GHS label elements, including precautionary statements:

GHS: No signal word required

Hazard statements:

None assigned under GHS classification.

Precautionary statements:

P262: Do not get in eyes, on skin, or on clothing.
P264: Wash hands thoroughly after handling.
P280: Wear protective gloves/eye protection as a general industrial hygiene precaution.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

2.3 Other hazards which do not result in classification:

Fine powder/dust may cause mechanical irritation to eyes, skin, and respiratory tract on prolonged or repeated contact. Not a PBT or vPvB substance.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substances:

Chemical description: DL-Malic acid (racemic mixture of D- and L-malic acid), a dicarboxylic hydroxy acid
In accordance with Annex 4.3.3 of the GHS, the product contains:

Identification	Chemical Name / Classification	Concentration
CAS: 6915-15-7	DL-Malic acid — Not classified	≥99.0% (food/pharma grade, typical)

To obtain more information on the hazards of the substances, consult sections 11, 12 and 16.

3.2 Mixtures:

Non-applicable

SECTION 4: FIRST AID MEASURES

4.1 Description of necessary first-aid measures:

Generally regarded as a low-hazard food-grade material; however, standard first-aid measures for organic acids should be observed. Seek medical attention if symptoms persist, showing this SDS.

By inhalation:

If dust is inhaled and irritation occurs, remove the person to fresh air and keep at rest. Seek medical attention if discomfort continues.

By skin contact:

Remove contaminated clothing. Wash skin thoroughly with plenty of water and soap. If irritation persists, seek medical advice.

By eye contact:

Rinse immediately with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Remove contact lenses if present and easy to do. Seek medical attention if irritation persists.

By ingestion/aspiration:

Rinse mouth with water. If large quantities are swallowed or discomfort occurs, seek medical advice. Do not induce vomiting unless directed by medical personnel.

4.2 Most important symptoms/effects, acute and delayed:

May cause mild irritation to eyes, skin, and respiratory tract on contact with concentrated dust or solutions. No significant delayed effects known.

4.3 Indication of immediate medical attention and special treatment needed, if necessary:

Treat symptomatically. No specific antidote required.

SECTION 5: FIRE-FIGHTING MEASURES

5.1 Suitable extinguishing media:
Suitable: Water spray, foam, dry chemical powder, carbon dioxide (CO₂) – select based on surrounding fire.
Unsuitable: None known.

5.2 Specific hazards arising from the chemical:
Combustible organic solid. Fine dust dispersed in air in sufficient concentration may present a dust explosion hazard in the presence of an ignition source. Thermal decomposition may release carbon monoxide and carbon dioxide.

5.3 Special protective actions for fire-fighters:
Wear self-contained breathing apparatus (SCBA) and full protective clothing in case of large fires. Cool fire-exposed containers with water spray.

Additional provisions:
Avoid generating dust clouds near ignition sources. Prevent fire-fighting water from entering drains/waterways where feasible.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures:
For non-emergency personnel:
Avoid generating dust. Use appropriate personal protective equipment (see Section 8). Ensure adequate ventilation.

For emergency responders:
Wear standard PPE as per Section 8. No special respiratory protection normally required for small spills.

6.2 Environmental precautions:
Prevent large quantities from entering drains, waterways or soil. Low hazard to the environment; contain where practicable.

6.3 Methods and materials for containment and cleaning up:
Sweep or vacuum up spilled material and place in a suitable closed container for recovery or disposal. Avoid dust formation. Wash residual area with water.

6.4 Reference to other sections:
See sections 8 and 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling:
A. General precautions for safe use:
Avoid generating and inhaling dust. Use with adequate local exhaust ventilation. Avoid contact with strong oxidizers and strong bases.

B. Technical recommendations for the prevention of fires and explosions:
Use non-sparking tools and bond/ground equipment when handling powder in bulk to minimise static discharge risk. Keep away from open flames and ignition sources.

C. Technical recommendations on general occupational hygiene:
Do not eat, drink or smoke while handling. Wash hands thoroughly after handling.

D. Technical recommendations to prevent environmental risks:
Avoid release to the environment. Store in closed containers when not in use.

7.2 Conditions for safe storage, including any incompatibilities:
A. Specific storage requirements:

Storage temperature	Cool, dry place, below 30°C
Relative humidity	Low humidity, in tightly closed containers
Shelf life (typical)	24 months from manufacture, unopened (typical value – refer to current specification sheet)

B. General conditions for storage:
Store in a cool, dry, well-ventilated area away from direct sunlight, moisture, strong oxidizers and strong alkalis. Keep container tightly closed.

7.3 Specific end use(s):
Food and beverage acidulant; pharmaceutical excipient; industrial buffering/chelating agent. Refer to product-specific technical data sheet for application guidance.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters:
No specific occupational exposure limit (OEL) has been established for malic acid under the Factories Act, 1948, or by ACGIH/OSHA. General dust exposure limits (e.g. for particulates not otherwise classified) may be applied as a precaution: typically 10 mg/m³ (inhalable fraction, TWA 8h) – typical value, refer to current specification sheet.

8.2 Appropriate engineering controls:
Use local exhaust ventilation where dust may be generated, such as during bulk transfer or weighing, to maintain airborne concentrations below applicable exposure limits.

B. Respiratory protection:
Not normally required under good ventilation. For dusty operations, use a particulate filter mask (P1/P2 or equivalent).

C. Specific protection for the hands:
Protective gloves (nitrile or PVC) recommended for prolonged or repeated handling.

D. Eye and face protection:
Safety glasses with side shields recommended when handling powder; chemical goggles for solution handling.

E. Bodily protection:
Standard industrial work clothing. Food-grade handling areas should follow applicable hygiene/GMP protective clothing requirements.

F. Additional emergency measures:
Eyewash station and washing facilities should be available in the work area.

Environmental exposure controls:
No specific measures required beyond good housekeeping; avoid release of bulk quantities to the environment.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties:

Appearance	
Physical state at 20°C	Solid (crystalline powder/granules)
Appearance	White to off-white crystalline powder
Color	White
Odor	Odourless
Odour threshold	Not established
Volatility	

Boiling point at atmospheric pressure	Decomposes before boiling (>150°C)
Vapour pressure at 20°C	Negligible
Evaporation rate at 20°C	Not relevant (solid)
Product Description	
Density / Relative density at 20°C	≈1.6 g/cm³
Bulk density	Typical value – refer to current specification sheet
Concentration	≥99.0% (typical, food/pharma grade)
pH (10% aqueous solution)	≈1.5 – 2.5
Partition coefficient n-octanol/water	log Pow = -1.26
Solubility in water at 20°C	≈558 g/L (highly soluble)
Decomposition temperature	≈150°C
Melting point/freezing point	128–132°C
Flammability	
Flash Point	Not relevant (combustible solid)
Flammability (solid, gas)	Not readily flammable
Autoignition temperature	Not established
Lower / Upper flammability limit	Not established
Particle Characteristics	
Median particle size	Typical value – refer to current specification sheet

Values are typical for commercial DL-malic acid, food/pharma grade, and may vary within specification tolerances.

9.2 Other information:

Explosive properties	Not explosive; fine dust may present combustible dust hazard
Oxidising properties	Not oxidising
Corrosive to metals	Mildly corrosive to certain metals in aqueous solution (e.g. mild steel)
Heat of combustion	Not established
Surface tension	Not relevant (solid)
Refraction index	Not relevant

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity:
Stable under normal conditions of use. May react with strong oxidizing agents and strong bases, generating heat.

10.2 Chemical stability:
Chemically stable under recommended storage, handling and use conditions.

10.3 Possibility of hazardous reactions:
No hazardous reactions expected under normal conditions of use.

10.4 Conditions to avoid:

Shock/Friction	Contact with Air	Increase in Temperature	Sunlight	Humidity
Not applicable	Not applicable	Avoid excessive heat/decomposition	No specific precaution	Avoid prolonged exposure to moisture (hygroscopic)

10.5 Incompatible materials:

Strong Oxidizers	Strong Bases	Reactive Metals	Reducing Agents
Avoid contact	Avoid contact (neutralisation, heat generation)	Avoid contact with reactive metals	No specific incompatibility known

10.6 Hazardous decomposition products:
Thermal decomposition at high temperature may release carbon monoxide and carbon dioxide.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects:
Malic acid is widely used as a food additive (E296) and is of low acute toxicity. Under normal conditions of industrial handling, adverse effects are not expected; however, concentrated exposure may cause the following:

- A. Ingestion (acute effect):**
Low toxicity. Large quantities may cause gastrointestinal discomfort due to acidity.
- B. Inhalation (acute effect):**
Dust may cause mild irritation of the respiratory tract. Not classified as an inhalation hazard.
- C. Contact with skin and eyes (acute effect):**
May cause mild, transient irritation of skin and eyes on prolonged or concentrated contact. Not classified as a skin/eye irritant under GHS criteria.
- D. CMR effects (carcinogenicity, mutagenicity, reproductive toxicity):**
Not classified. No evidence of carcinogenic, mutagenic or reproductive toxicity based on available data. Not listed by IARC.
- E. Sensitizing effects:**
Not classified as a skin or respiratory sensitizer.
- F. Specific target organ toxicity (STOT) – single exposure:**
Not classified.
- G. Specific target organ toxicity (STOT) – repeated exposure:**
Not classified based on available data.
- H. Aspiration hazard:**
Not applicable (solid).

Product-specific toxicological information:

Identification	Acute Toxicity	Genus
DL-Malic acid CAS: 6915-15-7	LD50 oral: >1600 mg/kg	Rat
	LD50 dermal: >2000 mg/kg (no data indicating hazard)	Rabbit

SECTION 12: ECOLOGICAL INFORMATION

Not expected to be hazardous to the aquatic environment based on available data. Readily biodegradable.

12.1 Toxicity:

Acute Toxicity	Species	Genus
LC50: >100 mg/L (96h) – low toxicity (typical value)	Non-applicable	Fish
EC50: >100 mg/L (48h) – low toxicity (typical value)	Non-applicable	Crustacean (Daphnia)

12.2 Persistence and degradability:

Readily biodegradable; naturally metabolised in the environment (TCA cycle intermediate).

12.3 Bioaccumulative potential:

Low potential for bioaccumulation (log Pow ≈ -1.26).

12.4 Mobility in soil:

Koc	Henry	Dry Soil	Moist Soil
Low (high water solubility)	Negligible	Moderate mobility	Moderate mobility

12.5 Results of PBT and vPvB assessment:

Does not meet PBT/vPvB criteria.

12.6 Other adverse effects:

None known.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Disposal methods:

Dispose of in accordance with local, state and national regulations. Small quantities may be diluted with water and neutralised prior to disposal where locally permitted. Do not discharge concentrated material directly into waterways. Packaging should be emptied completely before disposal/recycling.

Refer to national and local regulations on waste management.

SECTION 14: TRANSPORT INFORMATION

Transport of dangerous goods by land (ADR 2023 / RID 2023):

14.1 UN number	Not regulated (non-dangerous goods)
14.2 UN proper shipping name	Non-applicable
14.3 Transport hazard class(es)	Not classified
14.4 Packing group	N/A
14.5 Environmental hazard	No
14.6 Special precautions for user	None
14.7 Transport in bulk	Non-applicable

Transport of dangerous goods by sea (IMDG):

14.1 UN number	Not regulated (non-dangerous goods)
14.2 UN proper shipping name	Non-applicable
14.3 Transport hazard class(es)	Not classified
14.4 Packing group	N/A
14.5 Marine pollutant	No
14.6 Special precautions for user	None
14.7 Transport in bulk	Non-applicable

Transport of dangerous goods by air (IATA/ICAO):

14.1 UN number	Not regulated (non-dangerous goods)
14.2 UN proper shipping name	Non-applicable
14.3 Transport hazard class(es)	Not classified
14.4 Packing group	N/A
14.5 Environmental hazard	No
14.6 Special precautions for user	None
14.7 Transport in bulk	Non-applicable

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations specific for the product in question:

Permitted as a food additive (E296) under the Food Safety and Standards Authority of India (FSSAI) regulations, subject to applicable use-level limits. It is recommended to use the information included in this safety data sheet as data used in a risk evaluation of local circumstances.

Other legislation:

Food Safety and Standards Act, 2006 and associated Regulations (India)
The Factories Act, 1948, as amended
Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 (not applicable – product not classified as hazardous)

SECTION 16: OTHER INFORMATION

Legislation related to safety data sheets:

This safety data sheet has been designed in accordance with Annex 4 – Guidance on the preparation of Safety Data Sheets of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Texts of the legislative phrases mentioned in sections 2 and 3:

Not applicable – no hazard statements assigned to this product.

The phrases indicated do not refer to the product itself; they are present merely for informative purposes and refer to the individual components which appear in section 3.

Advice related to training:

Minimal training is recommended to prevent industrial risks for staff using this product, in order to facilitate their comprehension and interpretation of this safety data sheet, as well as the label on the product.

Principal bibliographical sources:

Abbreviations and acronyms:

ADR: European agreement concerning the international carriage of dangerous goods by road | IMDG: International maritime dangerous goods code | IATA: International Air Transport Association | ICAO: International Civil Aviation Organisation | BCF: Bioconcentration factor | LD50: Lethal Dose 50 | LC50: Lethal Concentration 50 | EC50: Effective Concentration 50 | Log-POW: Octanol-water partition coefficient | Koc: Partition coefficient of organic carbon | IARC: International Agency for Research on Cancer

The information contained in this safety data sheet is based on sources, technical knowledge and current legislation, without being able to guarantee its accuracy. This information cannot be considered a guarantee of the properties of the product; it is simply a description of the security requirements. The occupational methodology and conditions for users of this product are not within Suraj Chemicals' awareness or control, and it is ultimately the responsibility of the user to take the necessary measures to obtain the legal requirements concerning the manipulation, storage, use and disposal of chemical products. The information on this safety data sheet only refers to this product, which should not be used for needs other than those specified.

END OF SAFETY DATA SHEET