



SAFETY DATA SHEET

MALIC ACID

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. PRODUCT IDENTIFIER

Product name: Malic Acid
Product No.: MALIC
CAS-No.: 617-48-1
EC No.: 230-022-8
Synonym: 2-Hydroxybutanedioic acid, Hydroxylsuccinic acid
Chemical Formula: $C_4H_6O_5$

1.2. RELEVANT IDENTIFIED USES OF THE SUBSTANCE OR MIXTURE AND USES ADVISED AGAINST

Recommended use: In the fertilisers;
In the washing and cleaning products;
In the plating agents and surface treating agents, water softeners and in water treatment chemicals;
In the cosmetics and personal care products.

1.3. DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET

HD Chemicals LTD
UNIT 9 Scott Business Park
PL2 2PB Plymouth UK

Contact Person responsible for SDS: Mr Peter Konefal, e-mail: contact@hdchemicals.co.uk

SECTION 2: HAZARDS IDENTIFICATION

2.1. CLASSIFICATION OF THE SUBSTANCE OR MIXTURE

Classification 67/548/EEC: Xi; R41
Classification – EC 1272/2008: Serious Eye Damage/Irritation; Category 2A (H319)

2.2. LABEL ELEMENTS



SIGNAL WORDS

Warning

RISK PHRASES

R41 Risk of serious damage to eyes

HAZARD PHRASES

H319 Causes serious eye irritation

PROTECTION PHRASES

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

SAFETY PHRASES

S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice

S37/39 Wear suitable gloves and eye/face protection

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

67/548/EEC/1999/45/EC

Composition information – main constituents

Substance name	Mol. Formula	EINECS No.	CAS-No.	Classification
Malic Acid	C ₄ H ₆ O ₅	230-022-8	617-48-1	Xi; R41



EC 1272/2008

Composition information – main constituents

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Malic Acid	C ₄ H ₆ O ₅	230-022-8	617-48-1	H319

SECTION 4: FIRST AID MEASURES**4.1. DESCRIPTION OF FIRST AID MEASURES**

First-aid measures general: Consult a physician when you feel unwell. Show this safety data sheet to the doctor in attendance.

Inhalation: If exposed to excessive levels, remove to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Never give anything by mouth to an unconscious person. Rinse mouth with water. Do not induce vomiting. Get medical attention.

Skin contact: Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Call a physician.

Eye contact: Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention if irritation persists.

4.2. MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED

Inhalation: No data available.

Ingestion: No data available.

Skin contact: Moderate skin irritation.

Eye contact: Severe eye irritation. Causes serious eye damage.

4.3. INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED

Treat symptomatically.

SECTION 5: FIREFIGHTING MEASURES**5.1. EXTINGUISHING MEDIA**

Suitable extinguishing media: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Adjust



extinguishing media to the surrounding fire. Use dry powder, carbon dioxide, water spray or alcohol-resistant foam.

Unsuitable extinguishing media: Do not use a heavy water stream.

5.2. SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE

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

5.3. ADVICE FOR FIRE-FIGHTERS

Fight fire with normal precautions from a reasonable distance. Wear self-contained breathing apparatus and full protective gear for fire fighting. Thermal decomposition can lead to release of irritating gases and vapours.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

Wear suitable protective equipment (splash goggles, protective suit, boots, gloves and self-contained breathing apparatus) to prevent any contamination of skin, eyes and personal clothing. Ensure adequate ventilation of the working area. Avoid contact with skin and eyes. Avoid breathing vapours, mist or gas. Avoid formation of dust. Keep unprotected persons away. Evacuate personnel to a safe area.

For personal protection see section 8.1.

6.2. ENVIRONMENTAL PRECAUTIONS

Avoid release to the environment. Do not allow to enter sewers/ surface or ground water. Do not allow to enter into soil/subsoil. Prevent further leakage or spillage if safe to do so. Use appropriate container to avoid environmental contamination.

6.3. METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

SECTION 7: HANDLING AND STORAGE

7.1. PRECAUTIONS FOR SAFE HANDLING

Handle in accordance with good industrial hygiene and safety practice. Use only under a chemical fume hood. Avoid formation of dust. Do not inhale dust/smoke/mist. Ensure adequate ventilation of the working area. Wear personal protective equipment. Avoid contact with eyes and skin. Do not eat or drink during the process, washing hands afterwards with suitable cleaning products. Remove



contaminated clothing and shoes. Wash clothing before re-using. Avoid the formation or spread of mists in the air.

7.2. CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

Keep in a cool, dry, well ventilated area. Keep in original tightly closed containers. Keep away from food and drink. Keep away from moisture and heat. Avoid incompatibles products: bases, oxidizing agents, reducing agents, alkali metals. Avoid dust generation.

7.3. SPECIFIC END USE(S)

See section 1.2.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. CONTROL PARAMETERS/EXPOSURE GUIDELINES

Occupational Exposure Limit Values (Malic Acid):

CAS NO	Exposure limit	Value	Name of Agent
617-48-1	TWA – 8 Hrs	No data available	No data available
617-48-1	STEL – 15 Min	No data available	No data available

Engineering controls:

Ensure good ventilation of the work station. Ensure that eyewash stations and safety showers are close to the workstation location. Wash hands before breaks and at the end of the working day.



EYE PROTECTION



FACE SHIELD



RESPIRATOR



PROTECTION WEAR



HAND PROTECTION

Protective equipment: Use protective tightly fitting safety goggle (European standard - EN 166), face shield, gloves (European standard - EN 374) and long sleeved clothing to prevent skin, body and eyes exposure. Use respirator if necessary.

Respiratory equipment: For nuisance exposures use type P95 (US) or type P1 (EU EN 143) particle respirator. For higher level protection use type OV/AG/P99 (US) or type ABEK-P2 (EU EN 143) respirator cartridges. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Skin and body protection: Wear appropriate protective gloves and clothing to prevent skin exposure. Wear impervious protective clothing. Wear appropriate protective work gloves when handling material to prevent skin contact. The glove material has to be impermeable and resistant to the product. Protective gloves should be replaced at first signs of wear. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact. Wash and dry hands.

The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Eye/Face protection: Safety glasses with side-shields. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Solid
Colour:	White
Odour:	Odourless
Initial boiling point (°C):	No data available
Melting point (°C):	128-132 °C
Freezing point:	No data available



Relative density:	1.665 g/cm ³
Specific gravity / density:	Not available
Vapour density:	Not available
Vapour pressure:	Not available
Flash point (°C):	Not available
Molecular mass:	134.09 g/mol
Auto-ignition temperature:	Not applicable
Oxidizing properties:	Not available
Decomposition temperature:	Not available
Molecular formula:	C ₄ H ₆ O ₅

SECTION 10: STABILITY AND REACTIVITY

10.1. REACTIVITY

Malic Acid is stable under normal conditions of use, storage and transport.

10.2. CHEMICAL STABILITY

This product is stable under normal conditions and under recommended usage and storage.

10.3. POSSIBILITY OF HAZARDOUS REACTIONS

When heated can decompose. May liberate toxic gases.

10.4. CONDITIONS TO AVOID

Keep away from food and drink. Keep away from moisture and heat.

10.5. INCOMPATIBLE MATERIALS

May liberate toxic gases. Avoid incompatibles products: bases, oxidizing agents, reducing agents, alkali metals.

10.6. HAZARDOUS DECOMPOSITION

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



SECTION 11: TOXICOLOGICAL INFORMATION

11.1. INFORMATION ON TOXICOLOGICAL EFFECTS

TOXIC DOSE	LD50 Oral – Rat – 3500 mg/kg LD50 Oral – Mouse – 1600 mg/kg
Inhalation:	No data available.
Ingestion:	No data available.
Skin contact:	Moderate skin irritation.
Eye contact:	Severe eye irritation. Causes serious eye damage.

SECTION 12: ECOLOGICAL INFORMATION

12.1. TOXICITY

Aquatic Toxicity:

Toxicity to freshwater fish: LC50: > 100 mg/l, 96h

Toxicity to water flea: LC50: 240 mg/l, 48h (Daphnia magna)

12.2. PERSISTENCE AND DEGRADABILITY

Readily biodegradable.

12.3. BIOACCUMULATIVE POTENTIAL

Bioaccumulation is unlikely.

12.4. MOBILITY

No data available.

12.5. RESULTS OF PBT AND vPvB ASSESSMENT

No data available.

12.6. OTHER ADVERSE EFFECTS

Do not allow to enter drains or water courses.



SECTION 13: DISPOSAL CONSIDERATIONS

Waste disposal recommendations: Disposal of malic acid should be in accordance with local and national legislation. Processing, use or contamination of this product may change the waste management options. Should not be released into the environment. Do not discharge into waterways or sewer systems. Do not re-use empty containers. Dispose of container and unused contents in accordance with applicable member state and local requirements.

Uncleaned packaging: Disposal must be made according to official regulations.

SECTION 14: TRANSPORT INFORMATION

IMDG

UN number	N/A
UN proper shipping name	N/A
Transport hazard class(es)	N/A
Packing group	N/A

ADR/RID

UN number	N/A
UN proper shipping name	N/A
Transport hazard class(es)	N/A
Packing group	N/A

IATA

UN number	N/A
UN proper shipping name	N/A
Transport hazard class(es)	N/A
Packing group	N/A

SECTION 15: REGULATORY INFORMATION

15.1. SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS/LEGISLATION SPECIFIC FOR THE SUBSTANCE OR MIXTURE

Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (as amended).

Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures (as amended).



15.2 CHEMICAL SAFETY ASSESSMENT

For this product a chemical safety assessment was not carried out.

SECTION 16: OTHER INFORMATION

General information

The information contained in this safety data sheet is provided in accordance with the requirements of the regulations. The product should not be used for purposes other than those shown in section 1 without first referring to the supplier and obtaining written handling instruction. As the specific conditions of use of the product are outside the suppliers control, the user is responsible for ensuring that the requirements of relevant legislation are complied with.

Revision Comments

This information is provided in a revised format to that previously produced.

Revision Date: 01/10/2018

Revision: 01

Safety Data Sheet Status Approved.

Date printed 01/10/2018

Signature Initials P.K.

DISCLAIMER:

If this product is re-distributed and re-formulated for sale, details of its hazards and recommended methods for safe handling must be passed to customers. Customers are urged to ensure that the product is entirely suitable for their own purpose. It is the customer's responsibility to ensure that a suitable and sufficient assessment of the risks created by a work activity using this product is undertaken before this product is used.

NOTE:

The information contained in this Safety Data Sheet does not constitute the users own assessment of workplace risk as required by other Health & Safety Legislation (e.g. the Health and Safety at Work Act,1974;the control of Substances Hazardous to Health Regulations,1988). The data given here is based on current knowledge and experience. The purpose of this data sheet is to describe the products in terms of their safety requirements. The data does not signify any warranty with regard to the product's properties.