



AMTRADE

Infosafe No™ AE16B	Issue Date :November 2009	ISSUED by AMTRADE	CS: 1.4.22
--------------------	---------------------------	-------------------	------------

Product Name **MALIC ACID**

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name MALIC ACID

Company Name Amtrade International Pty Ltd (ABN 49 006 409 936)

Address Level 6, 574 St Kilda Road
Melbourne
VIC. 3004 Australia

Emergency Tel. 1800 033 111 Aust

Telephone/Fax Number Tel: 61 3 9229 9229
Fax: 61 3 9229 9290

Email library@amtrade.com.au

Recommended Use Preparation of flavouring extracts, confections, soft drinks, effervescent salts; acidifier; dispersing agent; medicines; acidulant and anti-oxidant in foods. Used in wine manufacture. Used as a chelating agent. (Caution - Do not confuse with Maleic Acid)

Other Names

<u>Name</u>	<u>Product Code</u>
DL-Malic Acid 25kg	321394
DL-Malic Acid 25kg (NKHB)	
L-Malic Acid FCC 25kg	379409
o	
Apple Acid; 2-Hydroxy-Succinic Acid; Malic Acid; Hydroxy-Butanedioic Acid; 1-Hydroxyethane-1,2-Dicarboxylic Acid.	

2. HAZARDS IDENTIFICATION

Hazard Classification Workplace Hazardous Substance.
HAZARD CATEGORY: IRRITANT
Irritating to eyes, respiratory system and skin.

Not Dangerous Goods nor a Scheduled Poison.

Other Information No accounts of toxicity in industrial use have been reported.
Malic Acid is a constituent of the human diet because of its presence in many edible plants and fruits (especially) apples and in wine.
It is rapidly metabolised when eaten to Pyruvic Acid, and is ultimately eliminated as Carbon Dioxide.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Characterization Solid

<u>Ingredients</u>	<u>Name</u>	<u>CAS</u>	<u>Proportion</u>
	Malic Acid (DL)	617-48-1 *	>99.0%
	Fumaric acid	110-17-8	0.3-1 %
	Maleic acid	110-16-7	0.01-0.05 %
	Moisture	77321-18-5	0.2-0.4 %
	* There is an alternative CAS No.		-
	Malic Acid	6915-15-7	>99.0%

Other Information Commercial Malic Acid is a racemic mixture (DL-Malic Acid).

4. FIRST AID MEASURES

Inhalation Remove victim to fresh air. Keep at rest.
Seek medical advice if effects persist.



AMTRADE

Infosafe No™ AE16B Issue Date : November 2009 ISSUED by AMTRADE CS: 1.4.22

Product Name **MALIC ACID**

Ingestion	Rinse mouth with water. Give plenty to drink. If vomiting occurs give further water. Seek medical advice.
Skin	Wash contaminated skin with plenty of water. If irritation occurs, seek medical advice.
Eye	Irrigate with copious quantities of water for 15 minutes. In all cases of eye contamination it is a sensible precaution to seek medical advice.
First Aid Facilities	Eye wash station and safety shower, plus normal washroom facilities nearby.
Advice to Doctor	Treat symptomatically.

5. FIRE FIGHTING MEASURES

Fire Fighting Measures	Malic Acid is a combustible organic powder. Therefore any accumulation of dust could form an explosive organic dust cloud in air. EXTINGUISHING MEDIA: Any for the surrounding area (e.g. regular dry chemical, water, regular foam, carbon dioxide). For LARGE fires, use regular foam or flood with fine water spray. SPECIAL PROCEDURES: Move containers from the fire area if it can be done safely. Do not spread any spilled powder with water streams. Dike for later recovery and disposal.
Decomposition Temp.	140-150°C

6. ACCIDENTAL RELEASE MEASURES

Emergency Procedures	SPILLAGE: Wear appropriate protective clothing. Sweep up, but avoid generating a dust cloud. Put into clean labelled containers for recycling or disposal. Wash away any remaining residues with water.
-----------------------------	--

7. HANDLING AND STORAGE

Handling and Storage	HANDLING: Avoid eye contact and repeated or prolonged skin contact. Wear protective clothing. Keep containers closed when not in use. STORAGE: Keep dry. Store away from alkalis and oxidizing agents. Store away from heat and naked flames.
-----------------------------	---

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

National Exposure Standards	No specific exposure standard has been established by Safe Work Australia (formerly the Australian Safety & Compensation Council, formerly NOHSC). Keep atmospheric contamination as low a level as practically possible. Nuisance Dusts 10 mg/m ³ TWA (inspirable dust)
Engineering Controls	Normal dilution ventilation. Avoid generating and inhaling dusts. If dust clouds are formed, or created inside equipment, remove all ignition sources and ground if necessary to stop buildup of static charges that may generate a spark and cause an organic dust explosion.
Personal Protective Equipment	Avoid eye contact and repeated or prolonged skin contact. Wear impervious gloves (e.g. plastic or rubber). Wear protective overalls. Wear safety glasses with side shields or chemical goggles. Provide local exhaust ventilation or wear a dust respirator meeting AS1715/1716, when dust clouds formed may cause an inhalation hazard and/or ventilation is not adequate. Always wash hands before smoking, eating, drinking or using the toilet.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form	Solid
Appearance	White crystalline granular powder, strongly acid taste. It will slowly absorb moisture from the air (slightly hygroscopic).



AMTRADE

Infosafe No™ AE16B	Issue Date : November 2009	ISSUED by AMTRADE	CS: 1.4.22
--------------------	----------------------------	-------------------	------------

Product Name **MALIC ACID**

Decomposition Temperature	140-150°C
Melting Point	DL-Malic Acid: 127-133°C L-Malic : 101-104°C
Boiling Point	Not applicable (decomposes at 140-150°C).
Specific Gravity	1.6-1.7 at 20°C
pH Value	2.35 (1% solution)
Vapour Pressure	<0.1 mm Hg at 20°C
Vapour Density (Air=1)	4.6 (air=1)
Volatile Component	Nil
Flash Point	203-220°C
Flammability	Combustible organic powder. Dusts may form an explosive organic dust cloud. Will burn under fire conditions.
Auto-Ignition Temperature	349°C
Flammable Limits - Lower	May form an explosive organic dust cloud in air.
Molecular Weight	134.1
Other Information	Formula: HOOC-CH(OH)CH ₂ -COOH or C ₄ -H ₆ -O ₅ SOLUBILITY: DL is very soluble in water (560 g/L at 20°C). L is soluble in water (160 g/L at 20°C). Soluble in alcohol. Slightly soluble in ether. Insoluble in benzene. ACID DISSOCIATION CONSTANTS: DL pKa1 = 3.40, pKa2 = 5.05 (Patty 4th Ed. 1994) OCTANOL WATER PARTITION CO-EFFICIENT log Pow: -1.26 (experimental)

10. STABILITY AND REACTIVITY

Stability and Reactivity	Indefinitely stable, at room temperature, in the original unopened and sealed container. Once the container has been opened Malic Acid will start being oxidised to Oxaloacetic Acid. Use containers which have been opened, within 6 months. 50% stock solutions in water can be readily prepared for use at room temperature. CONDITIONS TO AVOID: Avoid forming an organic dust cloud explosion. Avoid heat, flames, sparks and other sources of ignition. INCOMPATIBLE MATERIALS: Oxidizing agents, alkalis, alkali metals, amines. Unsuitable container materials - Iron, Zinc, Aluminium. Aqueous solutions of Malic Acid can release explosive Hydrogen gas if in contact with these active metals. HAZARDOUS DECOMPOSITION PRODUCTS: Carbon Monoxide. HAZARDOUS POLYMERISATION: Will not occur.
---------------------------------	--

11. TOXICOLOGICAL INFORMATION

Toxicology Information	DL Form: Acute Oral Toxicity LD50 (rat) : 3200 mg/kg (Eastman Kodak 1981) Acute Oral Toxicity LD50 (mouse): 1600-3200 mg/kg (Eastman Kodak 1981) No cumulative effects have been reported following repeated exposures to Malic Acid (Patty, 4th Edition, 1994). Malic Acid showed no teratogenic effects in the developing chicken embryo (Patty, 4th Ed. 1994). Malic Acid did not induce mutations in the Ames test (Patty, 4th Ed. 1994).
Inhalation	Irritating when inhaled. May be harmful if large amounts are inhaled.
Ingestion	Not harmful in small amounts. May be harmful if large amounts are accidentally swallowed.
Skin	Moderately irritating to the skin.



AMTRADE

Infosafe No™ AE16B	Issue Date : November 2009	ISSUED by AMTRADE	CS: 1.4.22
--------------------	----------------------------	-------------------	------------

Product Name **MALIC ACID**

Eye Severely irritating to the eyes.
Chronic Effects Prolonged exposure may cause dermatitis.

12. ECOLOGICAL INFORMATION

Ecological Information Readily biodegradable. May be harmful effect due to pH shift.
Octanol / Water Partition Co-efficient: log Po/w = -1.26

13. DISPOSAL CONSIDERATIONS

Disposal Considerations DISPOSAL: In accordance with Local, State & Federal EPA waste regulations. Advise its irritant nature. Neutralise before disposing to sewer. The powder can be reacted or incinerated in an approved facility.

14. TRANSPORT INFORMATION

Transport Information NOT defined as Dangerous Goods: by the Australian Code for the Transport of Dangerous Goods by Road & Rail; by the IATA Air Transport Dangerous Goods Regulations; or by the IMDG (International Maritime Dangerous Goods) Code.

15. REGULATORY INFORMATION

Poisons Schedule Not Scheduled

Packaging & Labelling Workplace Hazardous Substance.
HAZARD CATEGORY: IRRITANT
R36/37/38 - Irritating to eyes, respiratory system and skin.
S24/25 Avoid contact with skin and eyes.
S37/39 Wear suitable gloves and eye/face protection.
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S28 After contact with skin, wash immediately with plenty of water.
Not Dangerous Goods nor a Scheduled Poison.

AICS (Australia) All ingredients are on the Australian Inventory of Chemical Substances. Also covered by Foods Standards Australia & New Zealand (FSANZ).

16. OTHER INFORMATION

Contact Person/Point For EMERGENCIES ONLY Contact : 1800 033 111 (All Hours Australia)
+61-3-9663-2130 (Australia - at Sea)
0800 734 607 (All Hours New Zealand)
+64-4-473-4607 (New Zealand - at Sea)

Amtrade International Pty Ltd: 61 3 9229 9229 (Melbourne)
61 2 9805 4200 (Sydney)
Amtrade New Zealand Limited : 64 9 579 6767 (Auckland)

NOTE: This MSDS summarises our best knowledge of the health and safety hazard information on the product, and how to safely handle and use the product in the workplace. Each user should read this MSDS and consider the information in the context of how the product will be handled and used in the workplace, including in conjunction with other products.

If clarification or further information is needed to ensure that an appropriate risk assessment can be made, the user should contact this company, or in the event of an emergency, the Emergency Response number above.

Our responsibility for products sold is subject to our standard terms and conditions, a copy is sent to our customers and is also available on request.



Material Safety Data Sheet

CS: 1.4.22

AMTRADE

Page: 5 of 5

Infosafe No™ AE16B

Issue Date :November 2009

ISSUED by AMTRADE

CS: 1.4.22

Product Name **MALIC ACID**

Authorised by

J.Simpson

Prepared by

JS091110

Other Information

Key Changes: General Review.

.
...End Of MSDS...

© Copyright ACOHS Pty Ltd

Copyright in the source code of the HTML, PDF, XML, XFO and any other electronic files rendered by an Infosafe system for Infosafe MSDS displayed on this site is the intellectual property of Acohs Pty Ltd.

Copyright in the layout, presentation and appearance of each Infosafe MSDS displayed on this site is the intellectual property of Acohs Pty Ltd.

The compilation of MSDS's displayed on this site is the intellectual property of Acohs Pty Ltd.

Copying of any MSDS displayed on this site is permitted for personal use only and otherwise is not permitted. In particular the MSDS's displayed on this site cannot be copied for the purpose of sale or licence or for inclusion as part of a collection of MSDS without the express written consent of Acohs Pty Ltd.