SAFETY DATA SHEET

Malic Acid Food Grade

SECTION 1: IDENTIFICATION

Product identifier used on a label:	**Malic Acid Food Grade**
Product code:	2131
CAS-No.:	6915-15-7
Synonyms:	DL-Hydroxybutanedioic acid (±)-2-Hydroxysuccinic acid DL-Malic acid
Recommended use of the chemical and restrictions on use:	Acidifying agent
Chemical family:	Organic acid
Chemical formula:	$C_4H_6O_5$
Name, address and phone # of supplier:	Aqua Bond Inc. 440 Passmore Ave. Toronto, ON, M1V 5J8 (416) 754-7211

24 Hr. Emergency phone #: **CANUTEC (613) 996-6666**

SECTION 2: HAZARDS IDENTIFICATION

Classification of the chemical: This material is classified as hazardous under U.S. OSHA regulations (29CFR 1910.1200) (Hazcom 2012) and Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015).

Hazard classification: Eye irritation (Category 2A), H319

Label elements:



Signal word: WARNING

Hazard statements: H319 Causes serious eye irritation.

Precautionary statements:

Prevention

P264 Wash skin thoroughly after handling.

P280 Wear eye protection/ face protection.

Response

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.

Other Hazards: Not available.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient name	Synonyms	CAS Number	Concentration (wt. %)
Malic acid	DL-Hydroxybutanedioic acid (±)-2-Hydroxysuccinic acid DL-Malic acid	6915-15-7	≥ 99.0 %

SECTION 4: FIRST-AID MEASURES

Description of first aid measures:

General information: Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

Inhalation: If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

Skin contact: Wash off with soap and plenty of water. Consult a physician.

Eye contact: Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Get medical attention if pain and irritation develops or persists.

Ingestion: Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

Most important symptoms and effects, both acute and delayed: irritation.

Indication of any immediate medical attention and special treatment needed: No data available.

SECTION 5: FIRE-FIGHTING MEASURES

Extinguishing media: Use media appropriate for the surrounding fire.
Suitable: Use water spray, foam, dry extinguishing powder or carbon dioxide.
Unsuitable: Water jet.
Flash point: Not Available.
Autoignition Temperature: Not Available.

Specific hazards arising from the substance:	No data available.
Hazardous thermal decomposition products:	Carbon monoxide (CO), carbon dioxide (CO_2)
Special protective equipment and precautions for fire-fighters:	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:	Use personal protective equipment. Avoid dust formation. Ensure adequate ventilation.
Environmental precautions:	Do not let product enter drains. Keep away from drains, surface and ground water.
Methods and materials for containment and cleaning up:	Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.
Special spill response procedures:	No data available.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling:	Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed.
Conditions for safe storage:	Keep in a tightly closed container. Store in a cool, dry, ventilated area away from sources of heat, and moisture.
Incompatible materials:	Bases, Oxidizing agents, Reducing agents, Alkali metals
Hazardous decomposition products:	Hazardous decomposition products formed under fire conditions: Carbon oxides.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

Ingredient	**Exposure limits**
Malic acid	No data available. Consult local authorities for acceptable exposure limits.

Engineering controls: Handle in accordance with good industrial hygiene and safety practice. Wash hands after handling the product and at the end of workday.

Individual protection measures:

Eye Protection: Use chemical safety goggles and / or a full face shield where splashing is possible. Maintain eye wash fountain and safety shower facilities in work area.

Skin Protection: Wear appropriate protective clothing, including boots, gloves, lab coat, as appropriate, to prevent skin contact. Handle with gloves. Gloves must be inspected prior to use.

Respiratory protection: 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).

Hygiene measures: Handle in accordance with good industrial hygiene and safety practice. Wash hands after handling the product and at the end of workday.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	White crystalline powder
Odour:	none
Odour threshold:	Not available.
pH:	Not available.
Melting point/Freezing point:	128-132 °C
Initial boiling point/boiling range:	Not available.
Flash point:	Not available.
Evaporation rate:	Not available.
Flammability (solid; gas) :	Not flammable.
Lower flammable/explosive limit:	187.5 g/m^3
Upper flammable/explosive limit:	Not available.
Vapour pressure:	0.00039 Pa at 25°C
Vapour density:	Not available.
Relative density:	Not available.
Solubility in water:	558 g/L (20 °C)
Partition coefficient (n-octanol/water) :	-1.26 at 25°C
Auto-ignition temperature:	Not available.
Decomposition temperature:	Not available.
Viscosity:	Not available.

SECTION 10: STABILITY AND REACTIVITY

Reactivity:	Stable under normal conditions.
Chemical stability:	Stable under recommended storage conditions.
Possibility of hazardous reactions:	No data available.
Conditions to avoid:	No data available.
Incompatible materials:	Bases, Oxidizing agents, Reducing agents, Alkali metals
Hazardous decomposition products:	Hazardous decomposition products formed under fire conditions: Carbon oxides

SECTION 11: TOXICOLOGICAL INFORMATION

Toxicity data

Acute toxicity:	LD50 Oral - Rat - male and female - 3,500 mg/kg (OECD Test Guideline 401) Inhalation: No data available Dermal: No data available LD50 Intraperitoneal - Rat - 100 mg/kg LD50 Intraperitoneal - Mouse - 50 mg/kg
Information on the likely routes of exposure:	Skin, eyes, ingestion, inhalation
Potential health effects (acute):	Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting.
Target organ effects:	No data available.
Carcinogenicity:	IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
Potential chronic health effects:	No data available.
Teratogenicity:	No data available.
Developmental effects:	No data available.
Fertility effects:	No data available.
Irritation/corrosion:	No data available.

SECTION 12: ECOLOGICAL INFORMATION

Toxicity

Toxicity to daphnia and other aquatic invertebrates	Immobilization LC50 - Daphnia magna (Water flea) - ca. 240 mg/l - 48 h (OECD Test Guideline 202)

Persistence and degradability:	No data available.
Bioaccumulative potential:	No data available.
Mobility in soil:	No data available.
Results of PBT and vPvB assessment:	No data available.
Other adverse effects:	No data available.

SECTION 13: DISPOSAL CONSIDERATIONS

Disposal methods: **Product:** The generation of waste should be avoided or minimized wherever possible. Dispose of surplus and nonrecyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.
Contaminated packaging: Dispose of as unused product.

SECTION 14: TRANSPORT INFORMATION

UN Number:	-
UN proper shipping name:	-
Transport hazard class:	-
Packing group:	-
DOT (US)	Not dangerous goods
IMDG	Not dangerous goods
IATA	Not dangerous goods
Special precautions for user:	Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident.

SECTION 15: REGULATORY INFORMATION

This product has been classified in accordance with the hazard criteria of the Hazardous Products Regulations (HPR) and the SDS contains all the information required by the HPR.

SECTION 16: OTHER INFORMATION

Revision date: January 21, 2020
UN = United Nations

Disclaimer

While the information and recommendations set forth are believed to be accurate as of data hereof, Aqua Bond Inc., makes no warranty with respect thereto and disclaims all liability from reliance thereon.