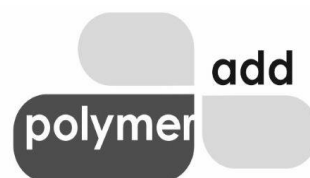


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MATERIAL SAFETY DATA SHEET

FUMARIC ACID MICRONISED

1. Identification of the Substance and Company

Item	Information
Product Name	Fumaric Acid Micronised
Chemical Name	Fumaric Acid
Synonyms	trans-2-Butenedioic Acid; (E)-Butenedioic Acid
CAS Number	110-17-8
EC Number	203-743-0
Molecular Formula	$C_4H_4O_4$
Molecular Weight	116.07 g/mol
Recommended Use	Micronised functional additive, acidulant, processing additive and industrial raw material
Supplier	Polymer Add (Thailand) Co., Ltd.
Emergency Telephone	[Insert telephone number]

2. Hazard Identification

GHS Classification

Hazard Class	Classification
Serious Eye Damage/Eye Irritation	Category 2
Combustible Dust	Fine micronised powder may form combustible dust concentrations in air

Signal Word: Warning

Hazard Pictogram: GHS07 – Exclamation Mark

Hazard Statement

- H319: Causes serious eye irritation.
- Micronised powder may cause mechanical irritation of the respiratory tract and skin.
- Airborne fine dust may form an explosive dust-air mixture under certain conditions.

Precautionary Statements

- P261: Avoid breathing dust.
- P264: Wash hands thoroughly after handling.
- P280: Wear protective gloves and eye 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 or attention.

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- P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.

3. Composition/Information on Ingredients

Component	CAS Number	EC Number	Concentration
Fumaric Acid	110-17-8	203-743-0	≥99.0% or according to product specification

The micronisation process changes the particle size but does not change the chemical identity of the substance.

4. First-Aid Measures

Inhalation:

Move the affected person to fresh air. Keep at rest in a position comfortable for breathing. Obtain medical attention if coughing, irritation or breathing difficulty continues.

Skin Contact:

Remove contaminated clothing. Wash the affected skin thoroughly with soap and water. Seek medical advice if irritation persists.

Eye Contact:

Immediately rinse cautiously with clean water for at least 15 minutes. Remove contact lenses if present and easy to do. Continue rinsing. Obtain medical attention if irritation persists.

Ingestion:

Rinse mouth thoroughly with water. Give water to drink if the person is conscious. Do not induce vomiting unless directed by medical personnel. Seek medical attention if discomfort occurs.

Most Important Symptoms:

Eye irritation, redness, tearing, coughing and irritation of the nose or throat from dust exposure.

5. Firefighting Measures

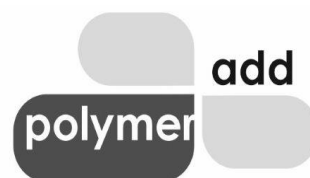
Item	Information
Suitable Extinguishing Media	Water spray, dry chemical powder, alcohol-resistant foam or carbon dioxide
Unsuitable Extinguishing Media	Avoid high-pressure water jets that may disperse accumulated powder
Flammability	Not classified as a flammable solid
Specific Hazards	Fine powder dispersed in air may create a combustible dust atmosphere
Hazardous Combustion Products	Carbon monoxide and carbon dioxide

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Protective Equipment

Firefighters should wear full protective equipment and self-contained breathing apparatus

Prevent dust accumulation and eliminate ignition sources where fine powder is handled.

6. Accidental Release Measures

Personal Precautions

- Avoid breathing dust.
- Avoid contact with eyes.
- Ensure adequate ventilation.
- Wear safety goggles, gloves and suitable particulate respiratory protection.
- Remove ignition sources and avoid electrostatic discharge.

Environmental Precautions

Prevent uncontrolled release into drains, waterways and soil.

Cleaning Method

Collect using an industrial vacuum cleaner suitable for combustible dust or by careful mechanical collection. Avoid dry sweeping, compressed air and any method that creates airborne dust. Place recovered material in a properly labelled container.

7. Handling and Storage

Handling

- Avoid generating and breathing dust.
- Use local exhaust ventilation at filling, mixing and transfer points.
- Keep away from heat, sparks, flames and other ignition sources.
- Ground and bond equipment where significant dust clouds may form.
- Avoid contact with eyes and prolonged contact with skin.
- Do not eat, drink or smoke in processing areas.

Storage

- Store in tightly closed original containers.
- Keep in a cool, dry and well-ventilated location.
- Protect from moisture and contamination.

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- Keep away from strong oxidising agents and strong bases.
- Prevent accumulation of loose powder on equipment and building surfaces.

8. Exposure Controls/Personal Protection

Control	Recommendation
Occupational Exposure Limit	No specific substance exposure limit established; follow applicable local limits for inhalable and respirable dust
Engineering Controls	Enclosed handling system and local exhaust ventilation
Respiratory Protection	P2, N95 or equivalent particulate respirator where dust exposure cannot be adequately controlled
Eye Protection	Chemical safety goggles; face shield where heavy dust exposure is possible
Hand Protection	Suitable protective gloves
Skin Protection	Long-sleeved protective clothing
Hygiene Measures	Wash hands after handling and before eating, drinking or smoking

9. Physical and Chemical Properties

Property	Typical Information
Appearance	White to off-white micronised crystalline powder
Odour	Odourless or faint characteristic odour
Particle Size	According to the applicable product specification
pH	Approximately 2.0–2.5 in aqueous suspension/solution
Melting/Decomposition Point	Approximately 286–290°C, with decomposition/sublimation
Boiling Point	Not applicable; decomposes before boiling
Flash Point	Not applicable to the solid product
Flammability	Not classified as flammable
Vapour Pressure	Negligible at ambient temperature
Relative Density	Approximately 1.63–1.64
Bulk Density	Product and particle-size dependent
Water Solubility	Slightly soluble; approximately 4–7 g/L at room temperature
Solubility in Other Solvents	Soluble in alcohol to a limited extent
Partition Coefficient	Low bioaccumulation potential
Explosive Properties	Fine airborne dust may form an explosive mixture
Oxidising Properties	Not classified as oxidising

10. Stability and Reactivity

Reactivity:

Fumaric acid is an organic acid and reacts with bases to form fumarate salts.

Chemical Stability:

Stable under recommended storage and handling conditions.

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Possibility of Hazardous Reactions:

Hazardous polymerisation is not expected. Dust clouds may ignite if exposed to a sufficiently strong ignition source.

Conditions to Avoid:

Excessive heat, open flames, sparks, electrostatic discharge, moisture and uncontrolled dust formation.

Incompatible Materials:

Strong oxidising agents, strong bases and reactive metals.

Hazardous Decomposition Products:

Carbon monoxide and carbon dioxide may be produced during fire or thermal decomposition.

11. Toxicological Information

Exposure Route	Information
Acute Oral Toxicity	Low acute toxicity; reported oral LD ₅₀ in rats is approximately 9,300 mg/kg
Inhalation	Dust may irritate the nose, throat and respiratory tract
Skin Contact	May cause mild mechanical or acidic irritation, particularly after prolonged exposure
Eye Contact	Causes serious eye irritation
Skin Sensitisation	Not expected to cause sensitisation
Germ-Cell Mutagenicity	Not classified based on available information
Carcinogenicity	Not classified as carcinogenic by major regulatory agencies
Reproductive Toxicity	Not classified based on available information
Aspiration Hazard	Not applicable to a solid
Chronic Effects	Repeated excessive dust exposure may cause continuing respiratory irritation

12. Ecological Information

Ecotoxicity:

Not expected to be highly toxic to aquatic organisms under normal conditions of use. Localised discharge may reduce water pH.

Persistence and Degradability:

Expected to be biodegradable.

Bioaccumulative Potential:

Low potential for bioaccumulation.

Mobility in Soil:

May dissolve partially and migrate with water.

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Other Adverse Effects:

Avoid uncontrolled discharge of large quantities into waterways or drainage systems.

13. Disposal Considerations

Dispose of unused material and contaminated packaging in accordance with applicable local, national and international regulations.

Do not discharge large quantities into drains or waterways. Empty packaging should be completely emptied before recycling or disposal. Packaging containing residual powder should be handled as chemical waste.

14. Transport Information

Regulation	Classification
UN Number	Not assigned
UN Proper Shipping Name	Not regulated as dangerous goods
ADR/RID	Not regulated
IMDG	Not regulated
IATA/ICAO	Not regulated
Transport Hazard Class	Not applicable
Packing Group	Not applicable
Marine Pollutant	No

Protect containers from moisture, physical damage and excessive heat during transportation.

15. Regulatory Information

Fumaric acid is listed under CAS No. 110-17-8 and EC No. 203-743-0.

The substance is generally classified as causing serious eye irritation under the Globally Harmonized System. Food, pharmaceutical or food-contact compliance must be confirmed separately against the grade supplied, purity requirements, intended application and applicable national regulations.

Micronisation does not change the chemical classification, but it increases the potential for airborne dust exposure and combustible dust formation.

16. Other Information

Product: Fumaric Acid Micronised

CAS Number: 110-17-8

Revision Date: [Insert date]

Version: 1.0

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The information provided is based on available safety information for fumaric acid. Actual particle size, purity, moisture, bulk density and other product-specific values should be confirmed using the applicable specification and Certificate of Analysis.

This document should be reviewed against the raw-material supplier's current SDS and the regulations of the country where the product will be manufactured, supplied or used before formal issue.

Reference information: PubChem – Fumaric Acid, TCI – Fumaric Acid.

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