



SAFETY DATA SHEET

Product: FUMARIC ACID
Registration No: 01 - 2119485492 - 31 - 0003

Revision: 00

Date: 12 /28/2010

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1- IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Identification of the substance:

Product name: **FUMARIC ACID**

Use of the substance: **Non-food applications of Fumaric acid**

1. Industrial use, as an Intermediate for production of resins.
2. Industrial use as an Intermediate for the synthesis of Pharmaceuticals.
3. Manufacture of rubber products.
4. Used as laboratory reagent.
5. Used in the manufacture of bulk large scale chemicals (including petroleum products).

Supplier identification

Company: Thirumalai chemicals Limited
Address: No-25B Sipcot Industrial Complex
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2- HAZARDS IDENTIFICATION

Classification of the chemical product:

Classification system adopted: European Chemical Bureau – European Community: Directive 67/548/EEC (substances).

Hazard Class and Category: Eye Irritation

Risk Phrases: R36: Irritating to Eyes.

Classification system adopted: REGULATION (EC) No 1272/2008 of the European Parliament and of the Council, of 16 December 2008.

Hazard Class and Category: Eye Irritation - Category 2

Hazard statements: H319: Causes serious eye irritation.



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3- COMPOSITION/INFORMATION ON INGREDIENTS

Substance name:	FUMARIC ACID
Chemical formula:	C4H4O4
Synonym:	Trans-2-butenedioic acid, (E)-butenedioic acid, 2- butenedioic acid.
Concentration:	99.5 %, minimum
CAS Number:	110-17-8
EINECS number:	203-743-0
Classification:	Directive 67/548/EEC Xi; R36 ; S2-Keep out of reach of children; S25-Avoid contact with eyes; S26-In case of contact with eyes, rinse immediately with plenty of water and get medical advice. REGULATION (EC) No 1272/2008 Eye irritation – Category 2; H319

4- FIRST-AID MEASURES

Exposure routes	
Inhalation:	Remove to fresh air and keep at rest. Monitor respiratory function. If breathing is difficult, give oxygen. If necessary, give artificial respiration. Seek medical attention.
Skin contact:	Remove contaminated clothing and shoes. Wash with plenty of soap and water. Seek medical attention.
Eye contact:	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Seek medical attention.
Ingestion:	Rinse mouth of victim with plenty of water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Seek medical



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attention.

Protection of first-aiders and/or special notes to a physician:

Avoid contact with this product while helping the victim; keep the victim warmed. Symptomatic treatment should include, above said notes.

5- FIRE-FIGHTING MEASURES

Suitable extinguishing media: Water, carbon di oxide, dry chemicals,

Special hazard arising from the chemical: Toxic fumes of carbon di oxide and carbon monoxide.

Special protective equipment for fire-fighters: Use self-contained breathing apparatus (SCBA) operated in positive pressure mode and complete protective clothing.

6- ACCIDENTAL RELEASE MEASURES

Personal precautions: Remove ignition sources. Do not touch damage containers or spilled material unless wearing appropriate protective clothing. Avoid contact with skin and eyes.
Use protective gloves, safety goggles and protective clothing.

Environmental precautions: Prevent from entering into watercourses, sewerage and confined areas.

Cleaning up methods:

Appropriate containment techniques: Use mechanical handling equipment. Avoid raising dust. Flush with plenty of water. Dispose off in compliance with local and national regulations.

Appropriate clean up: Discard any product, waste, container or wrapper available in an



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procedures: appropriate manner as not to harm the environment, according to federal regulations.

Inappropriate containment or clean up techniques: Do not discard directly in the environment or the sewage network.

7- HANDLING AND STORAGE

Appropriate technical measures for handling

Precautions for safe handling:

Avoid inhalation, contact with skin and eyes. Do not handle near incompatible materials. Use proper personal protective equipment as indicated in Section 8.

Hygiene measures:

Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. Wash hands before eating, drinking, smoking or going to the toilet. Take off all contaminated clothing and wash before reuse.

Appropriate technical measures for storage

Conditions for safe storage:

Keep only in original container, in a cool, dry, well-ventilated place. Keep away from food. Store locked up. Keep out of reach of children.
Avoid static electricity by grounding.

Solid: It is not advisable to store the product for long periods in order to avoid acidity increasing and aggregation due to crystallization bridges because of its hygroscopic characteristic.

Incompatible products:

Protect against moisture. Containers should be stored tightly sealed in a dry place

Packaging compatibilities

Recommended use:

Solid: Polypropylene packages.



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8- EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limit values:	Substance	TLV – TWA (ACGIH)	REL – TWA (NIOSH)	PEL - TWA (OSHA)
		(ppm)	(ppm)	(ppm)
	Fumaric acid	NA	NA	NA

Exposure controls:

Engineering controls measures:

The best protection is to enclose operations and/or provide local exhaust ventilation at the site of chemical release. It is recommended safety shower and eye bath available near work side. Compressed air lines used for respiratory protection should be provided with purifiers. Engineering controls are the most effective way of reducing product exposure.

Personal protective equipment:

Eye/face protection:

Protective safety goggles.

Protective clothing. Safety leather shoes with rubber impermeable sole.

Solid:

Skin/body protection:

Latex or PVC gloves. Overalls of single canvas with long sleeves and hood.

Respiratory protection:

Full face piece respirator for organic vapors. In cases of high potential of exposure use a supplied-air respirator, full facepiece, operated in positive-pressure mode.

Special precautions:

Avoid wear contact lenses while using this product.

Hygiene measures:

Do not eat, drink or smoke while using this product. Wash hands before eating, drinking, smoking or going to the toilet. Take off all contaminated clothing and wash before reuse.



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9- PHYSICAL AND CHEMICAL PROPERTIES

General information:

Physical state: Powder

Colour: White

Odour: Odorless

Important health, safety and environmental information:

Boiling point: 200°C(Sublimes)

Vapour pressure: 0.54×10^{-4} mm Hg at 25°C

Density: 1.635 at 20°C

Solubility in water (g/ltr): 7 at 25°C

Molecular weight 116.07

Partition Coefficient: Log Kow = 0.46

Melting point: 287°C



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10- STABILITY AND REACTIVITY

Stability:	Stable under normal conditions of storage and handling. Polymerization will not occur.
Incompatible materials:	Strong oxidants, alkaline metals, piridine, amines, alkalis, quinoline.
Hazardous decomposition products:	Maleic acid, Maleic anhydride, Carbon monoxide and Carbon dioxide.

11- TOXICOLOGICAL INFORMATION

Acute toxicity:	LD ₅₀ (oral, rats): 10700 mg/kg
	LC50 (inhalation, rats): 1.306 mg/kg
	LC50 (dermal, rats):20000mg/kg
Skin corrosion/irritation:	Mildly irritating to the skin.
Serious eye damage/irritation:	Category 2
Respiratory or skin sensitization:	Not Sensitizing.
Germ cell mutagenicity:	Not mutagenic
Carcinogenicity:	Not listed as carcinogenic (IARC).
Reproductive toxicity:	NOAEL, rat: 400mg/kg).
Developmental toxicity:	Not developmental toxicant.



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12- ECOLOGICAL INFORMATION

Ecotoxicity:

Fish: Fresh water: LC50(96 h) >100mg/L

Daphnia: EC50(48h) : >100 mg/L (short term toxicity)

Algae: EC50 (72h): = >100mg/L

Persistence/degradability: Not Persistent

Bioaccumulative potential: Bioaccumulation is not expected (BCF >2000)

13- DISPOSAL CONSIDERATION

Recommended methods for safe and environmentally preferred disposal

Disposal methods: Prior to implementing land disposal of waste residue (including waste sludge), consult local legislation for adequate disposal methods. Empty containers can retain product residues and shall be disposed in accordance with the provisions proposed for the product.

14- TRANSPORT INFORMATION

Solid

International regulations

Road transport ADR/RID	Class:	NA	Number letter:	NA
	Warning sign:	NA	UN No:	NA
Maritime transport IMDG	Class:	NA	UN No:	NA
	EmS number:	NA	Packaging group:	NA
Air transport ICAO/IATA	Class:	NA	UN No:	NA
			Packaging group:	NA

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15-REGULATORY INFORMATION

Regulatory: REGULATION (EC) No 1907/2006 of the European Parliament and of the Council, of 18 December 2006.

Labelling: health, safety and environmental information

Hazard classes: Acute toxicity (oral) hazard category 4: Skin Corrosion category 1B: Respiratory sensitization Category 1, Skin sensitization Category 1

Hazard Pictograms:



GHS07

Signal word: Warning.

Hazard statements: H319: Causes serious eye irritation.



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Precautionary statements:

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 so.

P337+P313: If eye irritation persists, get medical advice/attention.

16. Other Information

The information provided in this safety data sheet is given in good faith and is correct to the best of our knowledge and information at the date of publication. It is designed only as guidance for safe handling, storage, transportation, use and disposal. No warranty is expressed or implied