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Design Report of Safety Data Sheet

★**Product Name:**	fumaric acid
★**Applicant:**	Puyang Shengyuan Energy Technology Co., Ltd.
Supplier:	Puyang Shengyuan Energy Technology Co., Ltd.
★**Composition of the product:**	fumaric acid (CAS: 110-17-8): ≥ 99.5%
Warranty of Design:	GLOBALLY HARMONIZED SYSTEM OF CLASSIFICATION AND LABELLING OF CHEMICALS (GHS) Eleventh revised edition
★**Information materials:**	HGBZ25118ZZ《Application》、P152891《Declaration of consistency of components of the sample submitted for inspection》

Design Result of SDS please see next page.

Designer: **Auditor:** **Approver:**

常州合规思远产品安全技术服务有限公司

Changzhou Hegui Siyuan Products Safety Technology Service Co., Ltd.

检验检测专用章

Notes: This SDS is valid before the implementation of the twelfth revised edition GHS.

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Safety Data Sheet

fumaric acid

Version: V2.0.1.1
Report No.: HGBZ25118ZZ2
Creation Date: 2025/11/26
Revision Date: -
*According to GHS (Eleventh Revised Edition)

Part 1: Identification

Product identifier

Product Name	fumaric acid
Product Model	Food grade
CAS No.	110-17-8
EC No.	203-743-0
Molecular Formula	$C_4H_4O_4$

Recommended use of the product and restrictions on use

Relevant identified uses	Please consult manufacturer.
Uses advised against	Please consult manufacturer.

Details of the supplier

Applicant Name	Puyang Shengyuan Energy Technology Co., Ltd.
Applicant Address	No. 1, North of the Intersection of Jinshui Road and Renmin Avenue, New Area Industrial Park, Industrial Agglomeration Area, Fan County, Puyang City, Henan Provinc
Applicant Post Code	457500
Applicant Telephone	0393-5331077
Applicant Fax	0393-5331077
Applicant E-mail	pyssykj@163.com
Supplier Name	Puyang Shengyuan Energy Technology Co., Ltd.
Supplier Address	No. 1, North of the Intersection of Jinshui Road and Renmin Avenue, New Area Industrial Park, Industrial Agglomeration Area, Fan County, Puyang City, Henan Provinc
Supplier Post Code	457500
Supplier Telephone	0393-5331077
Supplier Fax	0393-5331077
Supplier E-mail	pyssykj@163.com

Emergency phone number

Emergency phone number	0532-83889090

Part 2: Hazard(s) identification

Hazard classification according to GHS

Serious Eye Damage/Irritation	Category 2

GHS Label elements

Hazard pictograms	
Signal word	**Warning**

Hazard statements

H319	Causes serious eye irritation

Precautionary statements

- Prevention

P280	Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.
P264+P265	Wash hands and other parts of the body (if related) thoroughly after handling. Do not touch eyes.

- Response

P337+P317	If eye irritation persists: Get medical help.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

- Storage

Storage	Not applicable

- Disposal

Disposal	Not applicable

Hazard description

- Physical and chemical hazards

	No information available.

- Health hazards

Inhaled	Cough. Sore throat.
Ingestion	Accidental ingestion of the product may be harmful to the health of the individual.
Skin Contact	Redness.
Eye	Redness. Pain.

- Environmental hazards

	Please refer to 12th chapter of SDS.

Part 3: Composition/information on ingredients

Substance/mixture

	Substance

Component	CAS No.	EC No.	Concentration (weight percent, %)
fumaric acid	110-17-8	203-743-0	≥ 99.5

Part 4: First-aid measures

Description of first aid measures

General advice	Immediate medical attention is required. Show this safety data sheet (SDS) to the doctor in attendance.
Eye contact	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
Skin contact	Remove contaminated clothes. Rinse skin with plenty of water or shower.
Ingestion	Rinse mouth. Give plenty of water to drink. Rest.
Inhalation	Fresh air, rest.
Protecting of first-aiders	Ensure that medical personnel are aware of the substance involved. Take precautions to protect themselves and prevent spread of contamination.

Most important symptoms/effects, acute and delayed

1	Please see section 11.

Indication of any immediate medical attention and special treatment needed

1	Treat symptomatically.
2	Symptoms may be delayed.

Part 5: Fire-fighting measures

Extinguishing media

Suitable extinguishing media	Use extinguishing media suitable for surrounding area.
Unsuitable extinguishing media	There is no restriction on the type of extinguisher which may be used.

Specific hazards arising from the substance or mixture

1	Development of hazardous combustion gases or vapor possible in the event of fire.
2	Not considered a significant fire risk, however containers may burn.

Special protective equipment and precautions for fire-fighters

1	As in any fire, wear self-contained breathing apparatus (MSHA/NIOSH approved or equivalent) and full protective gear.
2	Fight fire from a safe distance, with adequate cover.
3	Prevent fire extinguishing water from contaminating surface water or the ground water system.

Part 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

1	Ensure adequate ventilation. Remove all sources of ignition. Take precautionary measures against static discharges.
2	Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.
3	Use personal protective equipment,do not breathe dust/fume.

Environmental precautions

1	Prevent further leakage or spillage if safe to do so.
2	Discharge into the environment must be avoided.

Methods and materials for containment and cleaning up

1	Keep leaks in a ventilated place.
2	Cut off the source of the leak as much as possible.
3	Adhered or collected material should be promptly disposed of, in accordance with appropriate laws and regulations.
4	Isolation of contaminated areas and restrictions on access.
5	It is recommended that emergency personnel wear dust masks.

6	Collect the spill with a clean shovel and place it in a clean, dry, loosely closed container and move the container away from the leak.

Part 7: Handling and storage

Precautions for safe handling

1	Handling is performed in a well ventilated place.
2	Wear suitable protective equipment.
3	Avoid contact with skin and eyes.
4	Keep away from heat/sparks/open flames/ hot surfaces.

Conditions for safe storage, including any incompatibilities

1	Keep containers tightly closed.
2	Keep containers in a dry, cool and well-ventilated place.
3	Keep away from heat/sparks/open flames/hot surfaces.
4	Store away from incompatible materials and foodstuff containers.

Part 8: Exposure controls/personal protection

Control parameters

- Occupational exposure limit values

Occupational Exposure limit values	No relevant regulations

- Biological limit values

Biological limit values	No relevant regulations

- Monitoring methods

1	EN 14042 Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents.
2	GBZ/T 300 and GBZ/T 160 series standard Determination of toxic substances in workplace air.

Engineering controls

1	Ensure adequate ventilation, especially in confined areas.
2	Ensure that eyewash stations and safety showers are close to the workstation location.
3	Set up emergency exit and necessary risk-elimination area.
4	Handle in accordance with good industrial hygiene and safety practice.

Personal protection equipment

General requirement	
Eye protection	Must wear appropriate safety goggles.
Hand protection	Must wear appropriate chemical protective gloves.
Respiratory protection	Must wear appropriate personal respiratory protective equipment.
Skin and body protection	Must wear appropriate chemical protective clothing and chemical resistant shoes.

Part 9: Physical and chemical properties

Physical and chemical properties

Physical state	Solid(crystalline powder or granules)
Colour	White
Odor	Fruity sourness
Odor threshold	No information available
pH	No information available
Melting point/freezing point(℃)	No information available
Initial boiling point and boiling range(℃)	290
Flash point(Closed cup,℃)	Not applicable
Evaporation rate	Not applicable
Flammability	No information available
Upper/lower explosive limits[%(v/v)]	Upper limit: No information available; Lower limit: No information available
Vapor pressure	Not applicable
Relative vapour density(Air＝1)	Not applicable
Relative density(Water=1)	1.64（20℃）
Solubility	No information available
n-octanol/water partition coefficient	No information available
Auto-ignition temperature(℃)	No information available
Decomposition temperature(℃)	No information available
Kinematic viscosity	Not applicable
Particle characteristics	No information available

Part 10: Stability and reactivity

Stability and reactivity

Reactivity	Contact with incompatible substances can cause decomposition or other chemical reactions.
Chemical stability	Stable under proper operation and storage conditions.
Possibility of hazardous reactions	No information available.
Conditions to avoid	Incompatible materials, heat, flame and spark.
Incompatible materials	No information available.
Hazardous decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Part 11: Toxicological information

Acute toxicity

Component	LD_{50}(oral)	LD_{50}(dermal)	LC_{50}(inhalation,4h)
fumaric acid	9300mg/kg(Rat)	No information available	No information available

Carcinogenicity

Component	List of carcinogens by the IARC Monographs	Report on Carcinogens by NTP
fumaric acid	Not Listed	Not Listed

Others

	fumaric acid (Component)
Skin corrosion/irritation	Based on available data, the classification criteria are not met
Serious eye damage/irritation	Causes serious eye irritation(Category 2)
Skin sensitization	Based on available data, the classification criteria are not met
Respiratory sensitization	Based on available data, the classification criteria are not met
Reproductive toxicity	Based on available data, the classification criteria are not met
STOT-single exposure	Based on available data, the classification criteria are not met
STOT-repeated exposure	Based on available data, the classification criteria are not met
Aspiration hazard	Based on available data, the classification criteria are not met
Germ cell mutagenicity	Based on available data, the classification criteria are not met

Part 12: Ecological information

Acute aquatic toxicity

Component	Fish	Crustaceans	Algae or other aquatic plants
fumaric acid	LC_{50}: ＞100mg/L (96h)(Fish)	EC_{50}: > 100mg/L (48h)(Daphnia magna)	ErC_{50}: > 100mg/L (72h)(Raphidocelis subcapitata)

Chronic aquatic toxicity

Chronic aquatic toxicity	No information available

Persistence and degradability

Component	Persistence (water/soil)	Persistence (air)
fumaric acid	Low	Low

Bioaccumulative potential

Component	Bioaccumulative potential	Comments
fumaric acid	Low	Log Kow=0.46

Mobility in soil

Component	log Koc	Remark	Data source
fumaric acid	0.800		Chemwatch

Results of PBT and vPvB assessment

Component	Results of PBT and vPvB assessment [according to (EC) No 1907/2006 with amendment 2020/878]
fumaric acid	Not PBT/vPvB

Part 13: Disposal considerations

Disposal considerations

Waste chemicals	Before disposal should refer to the relevant national and local laws and regulation. Recommend the use of incineration disposal.
Contaminated packaging	Containers may still present chemical hazard when empty. Keep away from hot and ignition source of fire. Return to supplier for recycling if possible.
Disposal recommendations	Refer to section waste chemicals and contaminated packaging.

Part 14: Transport information

Label

Transporting Label	Not applicable

IMDG-CODE

IMDG-CODE	NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

ICAO/IATA-DGR

ICAO/IATA-DGR	NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

UN-ADR

UN-ADR	NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Special precautions for user

	Transport vehicles should be equipped with the appropriate variety and quantity of fire equipment and emergency equipment leakage during transport. Before transport, should be preceded by checking whether container integrity, sealing. The transport unit must be placarded and marked in accordance with relevant transporting requirements.

Transport in bulk according to IMO instruments

- Transport in bulk according to Annex II of MARPOL and the IBC code

	No information available

- Transport in bulk in accordance with MARPOL Annex V and the IMSBC Code

	No information available

- Transport in bulk in accordance with the IGC Code

	No information available

Part 15: Regulatory information

International chemical inventory

Component	A	B	C	D	E	F	G	H	I	J	K	L	M
fumaric acid	√	√	√	√	√	√	√	√	√	×	√	√	√

【A】 China Inventory of Existing Chemical Substances(IECSC)
【B】 European Inventory of Existing Commercial Chemical Substances(EC inventory)
【C】 United States Toxic Substances Control Act Inventory(TSCA)
【D】 Canadian Domestic Substances List(DSL)
【E】 New Zealand Inventory of Chemicals(NZIoC)
【F】 Philippines Inventory of Chemicals and Chemical Substances(PICCS)
【G】 Korea Existing Chemicals Inventory(KECL)
【H】 Australian. Inventory of Industrial Chemical (AIICS)
【I】 Japan Inventory of Existing & New Chemical Substances(ENCS)
【J】 Thailand Existing Chemicals Inventory(TECI)
【K】 Mexico National Inventory of Chemical Substances(INSQ)
【L】 Russia Inventory of Existing Substances(DRAFT)
【M】 Inventory of Existing Chemical Substances in Taiwan, China(TCSI)

List of Chemical Substances under International Conventions

Component	A	B	C
fumaric acid	×	×	×

【A】 The Montreal Protocol on Substances that Deplete the Ozone Layer

【B】 Stockholm Convention on Persistent Organic Pollutants (POPs)
【C】 Rotterdam Convention on the prior informed consent procedure for certain hazardous chemicals and pesticides in international trade

Note:

"√" Indicates that the substance included in the regulations.

"×" No data or not included in the regulations.

Part 16: Other information

Information on revision

Creation Date	2025/11/26
Revision Date	-
Reason for revision	-

Reference

【1】 IPCS: The International Chemical Safety Cards (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home.
【2】 IARC, website: http://www.iarc.fr/.
【3】 OECD: The Global Portal to Information on Chemical Substances, website: https://www.echemportal.org/echemportal/.
【4】 CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple.
【5】 NLM: ChemIDplus, website: http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp.
【6】 EPA: Integrated Risk Information System, website: http://cfpub.epa.gov/iris/.
【7】 U.S. Department of Transportation: ERG, website: http://www.phmsa.dot.gov/hazmat/library/erg.
【8】 Germany GESTIS-database on hazard substance, website: http://gestis-en.itrust.de/.

Abbreviations and acronyms

CAS	Chemical Abstracts Service	UN	The United Nations
PC-STEL	Short term exposure limit	OECD	Organization for Economic Co-operation and Development
PC-TWA	Time Weighted Average	IMDG-CODE	International Maritime Dangerous Goods CODE
MAC	Maximum Allowable Concentration	IARC	International Agency for Research on Cancer
DNEL	Derived No Effect Level	ICAO	International Civil Aviation Organization
PNEC	Predicted No Effect Concentration	IATA	International Air Transportation Association
NOEC	No Observed Effect Concentration	ACGIH	American Conference of Governmental Industrial Hygienists
LC_{50}	Lethal Concentration 50%	NFPA	National Fire Protection Association
LD_{50}	Lethal Dose 50%	NTP	National Toxicology Program
EC_{50}	Effective Concentration 50%	PBT	Persistent, Bioaccumulative, Toxic
EC_X	Effective Concentration X%	vPvB	very Persistent, very Bioaccumulative
P_{OW}	Partition coefficient Octanol: Water	CMR	Carcinogens, mutagens or substances toxic to reproduction
BCF	Bioconcentration factor	RPE	Respiratory Protective Equipment
ED	Endocrine disruptor	G1	Carcinogenic to humans
G2A	Probably carcinogenic to humans	G2B	Possibly carcinogenic to humans
G3	Not yet classified as carcinogenic to humans	G4	Probably not carcinogenic to humans

Disclaimer

This Safety Data Sheet (SDS) was prepared according to UN GHS (the 11th revised edition). The data included was derived from international authoritative database and provided by the enterprise. Other information was based on the present state of our knowledge. We try to ensure the correctness of all information. However, due to the diversity of information sources and the limitations of our knowledge, this document is only for user's reference. Users should make their independent judgment of suitability of this information for their particular purposes. We do not assume responsibility for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.