Safety Data Sheet

Dibutyl fumarate

Version：V2.0.0.1
Report No.：A021534_EU_EN
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*Prepared in accordance with EU REACH Regulation (REACH 1907/2006 with amendment 2020/878)

Part 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Product Name	Dibutyl fumarate
Product Model	98%
Cat No.	A021534
CAS No.	105-75-9
EC No.	203-327-9
Molecular Formula	$C_{12}H_{20}O_4$
REACH Registration Number	Not available from the supplier. The applicability of REACH registration obligations shall be assessed by the EU importer based on the actual annual import tonnage, use and applicable exemptions.
UFI	Not applicable

1.2 Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses	Laboratory chemicals / R&D use only
Uses advised against	Food, drug, cosmetic, household or other uses

1.3 Details of the supplier of the Safety Data Sheet

Supplier Name	Pharmate GmbH
Supplier Address	Monschauer Str. 12, Düsseldorf, Germany
Supplier Post Code	40549
Supplier Telephone	+49 211 54224195
Supplier Fax	——
Supplier E-mail	info@pharmaten.de
Manufacturer Name	Anhui Senrise Technology Co., Ltd.
Manufacturer Address	No. 88, Weisan Road, High-tech Development Zone, Daguan District, Anqing, Anhui Province, China
Manufacturer Post Code	246005
Manufacturer Telephone	400-005-6266
Manufacturer Fax	+86（0）556-5555368
Manufacturer E-mail	Service@3ASenrise.com

1.4 Emergency telephone number

Emergency telephone number	0800 181 7059 (CHEMTREC Germany) Additional numbers: +44 20 3885 0382 / +1 703 527 3887 CHEMTREC Customer Number (CCN): 1025941
Opening hours	24h

Part 2: Hazards identification

2.1 CLP classification according to Regulation (EC) No. 1272/2008 with amendment 2023/707

Sensitization - skin	Category 1
Specific target organ toxicity - repeated exposure	Category 2
Hazardous to the aquatic environment - short-term (acute) hazard	Category 1
Hazardous to the aquatic environment - long-term (chronic) hazard	Category 1

2.2 Label elements

Hazard pictograms	
Signal word	Warning

Hazard statements

H317	May cause an allergic skin reaction
H373	May cause damage to organs through prolonged or repeated exposure(kidney)
H400	Very toxic to aquatic life
H410	Very toxic to aquatic life with long lasting effects

Precautionary statements

◆Prevention

P260	Do not breathe gas/mist/vapour/spray.
P272	Contaminated work clothing should not be allowed out of the workplace.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.

◆Response

P314	Get medical advice/attention if you feel unwell.
P321	Specific treatment (see related instructions on the label).
P391	Collect spillage.
P302+P352	IF ON SKIN: Wash with plenty of water.
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.
P362+P364	Take off contaminated clothing and wash it before reuse.

◆Storage

Storage	Not applicable

◆Disposal

P501	Dispose of contents/container in accordance with local/regional/national/ international regulations.

2.3 Other hazards

◆Results of PBT and vPvB assessment

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

◆Results of endocrine disrupting properties assessment

Component	Results of endocrine disrupting properties assessment [according to (EU) No 2017/2100 or (EU) No 2018/605]	
	Human endocrine disruptor	Environmental endocrine disruptor
Dibutyl fumarate	No information available	No information available

◆Other

	Not applicable.

Part 3: Composition/information on ingredients

3.1 Substance

Component	Weight % content(or range)	Classification according to Regulation (EC) No. 1272/2008 with amendment 2023/707 [CLP]	SCL, M-factor and ATE
Dibutyl fumarate CAS No.：105-75-9 EC No.：203-327-9 Index No.：-	≥ 98	Sensitization - skin, Category 1, H317; Specific target organ toxicity - repeated exposure, Category 2, H373; Hazardous to the aquatic environment - short-term (acute) hazard, Category 1, H400; Hazardous to the aquatic environment - long-term (chronic) hazard, Category 1, H410	M=1; M(Chronic)=1

3.2 Mixture

	Not applicable

Part 4: First aid measures

4.1 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	Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician if feel uncomfortable.
Skin contact	Take off contaminated clothing and shoes immediately. Wash off with plenty of soap and water for at least 15 minutes and consult a physician if feel uncomfortable.
Ingestion	Never give anything by mouth to an unconscious person. Call a physician or Poison Control Center immediately.
Inhalation	Move victim into fresh air. If breathing is difficult, give oxygen. Do not use mouth to mouth resuscitation if victim ingested or inhaled the substance. If not breathing, give artificial respiration and consult a physician immediately.
Protecting of first-aiders	Ensure that medical personnel are aware of the substance involved. Take precautions to protect themselves and prevent spread of contamination.

4.2 Most important symptoms/effects, acute and delayed

1	Substance accumulation, in the human body, may occur and may cause some concern following repeated or

	long-term occupational exposure.

4.3 Indication of any immediate medical attention and special treatment needed

1	Treat symptomatically.
2	Symptoms may be delayed.

Part 5: Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media	Small fire: dry chemical, CO_2, water spray or regular foam; Large fire: water spray, fog or regular foam; Fire involving tanks: cool containers with flooding quantities of water until well after fire is out.
Unsuitable extinguishing media	Large fire: Do not scatter spilled material with high-pressure water streams.

5.2 Specific hazards arising from the substance or mixture

1	Development of hazardous combustion gases or vapor possible in the event of fire.
2	Exposure to heat or contact with flames may result in expansion or explosive decomposition.

5.3 Advice for firefighters

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 firefighting wastewater from contaminating surface water or the ground water system.

Part 6: Accidental release measures

6.1 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 gas/mist/vapour/spray.

6.2 Environmental precautions

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

6.3 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	Absorb spilled material in dry sand or inert absorbent. In case of large amount of spillage, contain a spill by bunding.
5	Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container.

6.4 Reference to other sections

1	Personal Protective Equipment advice is contained in Section 8 of the SDS.
2	Disposal considerations advice is contained in Section 13 of the SDS.

Part 7: Handling and storage

7.1 Precautions for safe handling

◆ Protective measures

1	Handling is performed in a well ventilated place.
2	Wear suitable protective equipment.
3	Avoid contact with skin and eyes.

◆ Measures to prevent fire

1	Keep away from heat/sparks/open flames/ hot surfaces.

◆ Measures to prevent aerosol and dust generation

1	Not applicable.

◆ Advice on general occupational hygiene

1	Wash hands and face after using of the substances.
2	Replace the contaminated clothing immediately.

7.2 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.
5	Store only in the original container in accordance with national regulations (German TRGS 510).
6	Storage class (LGK) according to TRGS 510: 10

7.3 Specific end use(s)

1	In addition to use mentioned in the Section 1.2, unforeseen other specific end uses.

Part 8: Exposure controls/personal protection

8.1 Control parameters

◆Occupational exposure limit values

Occupational Exposure limit values	No relevant regulations

◆Biological limit values

Biological limit values	No relevant regulations

◆Monitoring methods

Monitoring methods	Use suitable workplace exposure monitoring methods in accordance with applicable EU/UK and national requirements. Where applicable, methods meeting EN 482 and EN 14042 may be used. For Germany, monitoring of inhalation exposure should be carried out in accordance with TRGS 402; IFA/DGUV methods may be used where applicable.

◆ Derived No effect level (DNEL)

Component	Route of exposure	DNEL for Workers			
		Acute effects (local)	Acute effects (systemic)	Chronic effects (local)	Chronic effects (systemic)
Dibutyl fumarate	Inhalation	No information available	No information available	No information available	2.2 mg/m3
	Oral	No information available	No information available	No information available	No information available
	Dermal	No information available	No information available	No information available	No information available

◆ Predicted No Effect Concentration (PNEC)

Component	A	B	C	D	E	F	G	H
Dibutyl fumarate	150 ng/L	No hazard identified	1.2 mg/L	No information available	No information available	No hazard identified	No information available	No potential for bioaccumulation

Note :

A: Freshwater; B: Seawater; C: Sewage treatment plant; D: Sediment (freshwater); E: Sediment (seawater); F: Air; G: Soil; H: Secondary poisoning(Hazard for Predators).

8.2 Exposure controls

8.2.1 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.

8.2.2 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.

8.2.3 Environmental exposure controls

Environmental exposure controls	No information available

Part 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	liquid
Colour	Colorless
Odour	No information available
Odour threshold	No information available
pH	No information available
Melting point/freezing point(℃)	-22

Boiling point or initial boiling point and boiling range(℃)	282.2
Flash point(Closed cup,℃)	149
Evaporation rate	No information available
Flammability	No information available
Lower and upper explosion limit/flammability limit [%(v/v)]	Upper limit: No information available; Lower limit: No information available
Vapour pressure	0.164Pa(20℃)
Relative vapour density(Air = 1)	7.88
Relative density(Water=1)	0.984(20 ℃)
Solubility(mg/L)	11.09mg/L(20 ℃)
Partition coefficient n-octanol/water (log value)	4.62(35 ℃)
Auto-ignition temperature(℃)	255
Decomposition temperature(℃)	No information available
Kinematic viscosity(mm²/s)	No information available
Explosive properties	No information available
Oxidizing properties	No information available
Particle characteristics	Not applicable

9.2 Other information

9.2.1 Information with regard to physical hazard classes

Information with regard to physical hazard classes	No information available

9.2.2 Other safety characteristics

Other safety characteristics	No information available

Part 10: Stability and reactivity

Stability and reactivity

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

Part 11: Toxicological information

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008 with amendment 2023/707

	Dibutyl fumarate(Component)
Skin corrosion/irritation	Based on available data, the classification criteria are not met
Serious eye damage/irritation	Based on available data, the classification criteria are not met

Skin sensitization	May cause an allergic skin reaction(Category 1)
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	May cause damage to organs through prolonged or repeated exposure(kidney)(Category 2)
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

Acute toxicity

Component	LD_{50}(oral)	LD_{50}(dermal)	LC_{50}(inhalation,4h)
Dibutyl fumarate	8530mg/kg(Rat)	No information available	No information available

Carcinogenicity

Component	List of carcinogens by the IARC Monographs	Report on Carcinogens by NTP
Dibutyl fumarate	Not Listed	Not Listed

11.2 Information on other hazards

11.2.1 Human endocrine disrupting properties

Component	Human endocrine disrupting properties
Dibutyl fumarate	No information available

11.2.2 Other Information

Other Information	See Section 11.1

Part 12: Ecological information

12.1 Toxicity

Acute aquatic toxicity

Component	Fish	Crustaceans	Algae or other aquatic plants
Dibutyl fumarate	LC_{50}: 0.1mg/L (96h)(Fish)	No information available	No information available

Chronic aquatic toxicity

Component	Fish	Crustaceans	Algae or other aquatic plants
Dibutyl fumarate	NOEC: 0.0074mg/L(Fish)	No information available	No information available

12.2 Persistence and degradability

Component	Persistence (water/soil)	Persistence (air)
Dibutyl fumarate	Low	Low

12.3 Bioaccumulative potential

Component	Bioaccumulative potential	Comments
Dibutyl fumarate	Medium	Log Kow=4.1599

12.4 Mobility in soil

Component	log Koc	Remark
Dibutyl fumarate	2.101	

12.5 Results of PBT and vPvB assessment

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

12.6 Endocrine disrupting properties

Component	Endocrine disrupting properties
Dibutyl fumarate	No information available

12.7 Other adverse effects

	No information available

Part 13: Disposal considerations

13.1 Waste treatment methods

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	

IMDG-CODE

14.1 UN number	3082
14.2 UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
14.3 Transport hazard class	9
14.4 Packing group	Ⅲ
14.5 Environmental hazards (Yes or no)	Yes
14.6 Environmentally Hazardous Substance Mark	

14.7 EmS No.	F-A，S-F

IATA-DGR

14.1 UN number	3082
14.2 UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
14.3 Transport hazard class	9
14.4 Packing group	Ⅲ
14.5 Environmental hazards (Yes or no)	Yes
14.6 Environmentally Hazardous Substance Mark	

UN-ADR

14.1 UN number	3082
14.2 UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
14.3 Transport hazard class	9
14.4 Packing group	Ⅲ
14.5 Environmental hazards (Yes or no)	Yes
14.6 Environmentally Hazardous Substance Mark	

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.

Maritime 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

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

International chemical inventory

Component	A	B	C	D	E	F	G	H	I	J	K	L	M

Dibutyl fumarate	√	√	√	×	√	√	√	√	√	√	×	√	√

【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 Chemicals(AIIC)
【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
Dibutyl fumarate	×	×	×

【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

European chemical inventory

Component	A	B	C	D	E	F	G	H
Dibutyl fumarate	×	×	×	√	×	×	×	×

【A】 Candidate list of Substances of Very High Concern for authorisation under EU REACH regulation
【B】 Substances requiring authorisation under EU REACH regulation
【C】 Substances restricted under EU REACH
【D】 Registered substances under EU REACH
【E】 Substance Evaluation – CoRAP under EU REACH
【F】 List of priority substances under EU water policy
【G】 Substances subject to POPs Regulation
【H】 Substances proposed as POPs

Note:
"√" Indicates that the substance included in the regulations.
"×" No data or not included in the regulations.

German water hazard class(WGK)

	WGK 3 – highly hazardous to water (precautionary classification according to AwSV; no published WGK classification available).

German technical instructions on air quality control(TA LUFT)

Component	TA LUFT	Remark
Dibutyl fumarate	Chapter 5.2.5 Organic Substances.The following values, specified as overall carbon, are in all not allowed to be exceeded in exhaust gas:Mass flow:0,50 kg/hr or Mass conc.:50 mg/m³ At old units with an annual mass flow till 1,5 Mg/a, specified as total carbon, the emissions in exhaust gas are not allowed to exceed 1,5 kg/h.	

German technical rules for hazardous substances(TRGS)

Component	TRGS	Remark
Dibutyl fumarate	TRGS 201|TRGS 400|TRGS 555|TRGS 600|TRGS 401|TRGS 500|TRGS 509|TRGS 510|TRGS 800	

15.2 Chemical safety assessment

	No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

Part 16: Other information

Information on revision

Creation Date	2026/10/28
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	Organisation 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 Transport 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 REACH Regulation 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

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