

Issuing Date 08-Aug-2024

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Revision Number 3

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1. Product identifier

Product Code 110-17-8  
Product Name Fumaric acid

### Other means of identification

*A registration number is not available for this substance as the substance or its use are exempted from registration according to Article 2 REACH Regulation (EC) No 1907/2006, the annual tonnage does not require a registration, or the registration is envisaged for a later registration deadline.*

EC No (EU Index No) 203-743-0  
CAS Number 110-17-8  
Chemical Name Fumaric Acid  
Synonyms Lichenic acid; trans-Butenedioic acid; Boletic acid  
Pure substance/mixture Substance  
Contains Fumaric acid  
Formula  $C_4H_4O_4$   
Molecular Weight 116.07 g/mol

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

Recommended Use Laboratory chemicals, Manufacture of substances, used as pharma excipients  
Uses advised against Do not use where contact with food or drinking water is possible

### 1.3. Details of the supplier of the safety data sheet

#### Manufacturer

Aceto Pharma (India) Private Limited 184-186/P, Vill: Chacharwadi Vasna, Sarkhej-Bavla Highway, Tal-Sanand, Dist-Ahmedabad-382110, Gujarat, India. Web: [www.actylislab.com](http://www.actylislab.com)E-Mail Address: [safety.amd@actylis.com](mailto:safety.amd@actylis.com); [qa.amd@actylis.com](mailto:qa.amd@actylis.com)

### 1.4. Emergency telephone number

Emergency telephone India: 02717 616 717

Emergency telephone - §45 - (EC)1272/2008
Europe 112

## SECTION 2: Hazards identification

**2.1. Classification of the substance or mixture**

Classification according to Regulation (EC) No. 1272/2008 [CLP]

<b>Serious eye damage/eye irritation</b>	Category 2 - (H319)
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**2.2. Label elements**

Contains Fumaric acid

**Signal word**

Warning

**Hazard statements**

H319 - Causes serious eye irritation.

**Precautionary Statements - EU (§28, 1272/2008)**

P264 - Wash face thoroughly after handling.

P280 - Wear protective gloves and eye/face 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/attention.

**Unknown acute toxicity****Additional information**

This product requires tactile warnings if supplied to the general public.

**2.3. Other hazards**

No information available.

**Endocrine Disruptor Information** This product does not contain any known or suspected endocrine disruptors.

Chemical name	EU - REACH (1907/2006) - Article 59(1) - Candidate List of Substances of Very High Concern (SVHC) for Authorisation	EU - REACH (1907/2006) - Endocrine Disruptor Assessment List of Substances
Fumaric acid	-	-

Chemical name	Endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100(3) or Commission Regulation (EU) 2018/605(4)
Fumaric acid	-

**SECTION 3: Composition/information on ingredients****3.1 Substances**

Chemical name	Weight-%	REACH registration number	EC No (EU Index No)	Classification according to Regulation (EC) No. 1272/2008 [CLP]	Specific concentration limit (SCL)	M-Factor	M-Factor (long-term)
Fumaric acid 110-17-8	98-102%	No data available	203-743-0	Eye Irrit. 2 (H319)	-	-	-

**Full text of H- and EUH-phrases: see section 16**Acute Toxicity Estimate

If LD50/LC50 data is not available or does not correspond to the classification category, then the appropriate conversion value from CLP Annex I, Table 3.1.2, is used to calculate the acute toxicity estimate (ATE<sub>mix</sub>) for classifying a mixture based on its components

Chemical name	Oral LD50 mg/kg	Dermal LD50 mg/kg	Inhalation LC50 - 4 hour - dust/mist - mg/L	Inhalation LC50 - 4 hour - vapor - mg/L	Inhalation LC50 - 4 hour - gas - ppm
Fumaric acid 110-17-8	9300	20000	1.306	No data available	No data available

This product does not contain candidate substances of very high concern at a concentration  $\geq 0.1\%$  (Regulation (EC) No. 1907/2006 (REACH), Article 59)

**SECTION 4: First aid measures****4.1. Description of first aid measures**

<b>General advice</b>	Before seeking medical attention remove contaminated clothing and shoes. Show this safety data sheet to the doctor in attendance.
<b>Inhalation</b>	Remove to fresh air. If breathing has stopped, give artificial respiration. Get medical attention immediately. If symptoms persist, call a physician.
<b>Eye contact</b>	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Keep eye wide open while rinsing. Do not rub affected area. Get medical attention if irritation develops and persists.
<b>Skin contact</b>	Wash skin with soap and water. In the case of skin irritation or allergic reactions see a physician.
<b>Ingestion</b>	Rinse mouth. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Get medical attention.
<b>Self-protection of the first aider</b>	Avoid contact with skin, eyes or clothing. Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Avoid breathing dust/fume/gas/mist/vapors/spray. Use personal protective equipment as required. See section 8 for more information.

**4.2. Most important symptoms and effects, both acute and delayed**

<b>Symptoms</b>	May cause redness and tearing of the eyes. Burning sensation. Coughing and/ or wheezing. Difficulty in breathing.
<b>Effects of Exposure</b>	See Section 11 for additional Toxicological Information.

**4.3. Indication of any immediate medical attention and special treatment needed**

<b>Note to physicians</b>	Treat symptomatically.
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**SECTION 5: Firefighting measures****5.1. Extinguishing media**

<b>Suitable Extinguishing Media</b>	Dry chemical, CO2 or water spray, Alcohol resistant foam.
<b>Large Fire</b>	Water spray or fog.
<b>Unsuitable extinguishing media</b>	Do not scatter spilled material with high pressure water streams.

### **5.2. Special hazards arising from the substance or mixture**

**Specific hazards arising from the chemical** No information available.

**Hazardous Combustion Products** Carbon monoxide. Carbon dioxide (CO2).

### **5.3. Advice for firefighters**

**Special protective equipment and precautions for fire-fighters** Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

## **SECTION 6: Accidental release measures**

### **6.1. Personal precautions, protective equipment and emergency procedures**

<b>Personal precautions</b>	Avoid contact with skin, eyes or clothing. Use personal protective equipment as required. Ensure adequate ventilation. Avoid generation of dust. Do not breathe dust.
<b>Other information</b>	Refer to protective measures listed in Sections 7 and 8.
<b>For emergency responders</b>	Use personal protection recommended in Section 8.

### **6.2. Environmental precautions**

**Environmental precautions** See Section 12 for additional Ecological Information.

### **6.3. Methods and material for containment and cleaning up**

<b>Methods for containment</b>	Prevent further leakage or spillage if safe to do so.
<b>Methods for cleaning up</b>	Take up mechanically, placing in appropriate containers for disposal.
<b>Prevention of secondary hazards</b>	Clean contaminated objects and areas thoroughly observing environmental regulations.

### **6.4. Reference to other sections**

**Reference to other sections** See section 8 for more information. See section 13 for more information.

## **SECTION 7: Handling and storage**

### **7.1. Precautions for safe handling**

<b>Advice on safe handling</b>	Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke when using this product. Avoid breathing dust/fume/gas/mist/vapors/spray. Avoid generation of dust. Ensure adequate ventilation.
<b>General hygiene considerations</b>	Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Avoid breathing dust/fume/gas/mist/vapors/spray.

**7.2. Conditions for safe storage, including any incompatibilities**

**Storage Conditions** Keep out of the reach of children. Keep container tightly closed in a dry and well-ventilated place.

**7.3. Specific end use(s)**

**Risk Management Measures** The information required is contained in this Safety Data Sheet.

**SECTION 8: Exposure controls/personal protection****8.1. Control parameters**

**Exposure Limits** This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

Chemical name	European Union	Austria	Belgium	Bulgaria	Croatia
Fumaric acid 110-17-8	-	-	-	-	-
Chemical name	Cyprus	Czech Republic	Denmark	Estonia	Finland
Fumaric acid 110-17-8	-	-	-	-	-
Chemical name	France	Germany TRGS	Germany DFG	Greece	Hungary
Fumaric acid 110-17-8	-	-	-	-	-
Chemical name	Ireland	Italy MDLPS	Italy AIDII	Latvia	Lithuania
Fumaric acid 110-17-8	-	-	-	-	-
Chemical name	Luxembourg	Malta	Netherlands	Norway	Poland
Fumaric acid 110-17-8	-	-	-	-	-
Chemical name	Portugal	Romania	Slovakia	Slovenia	Spain
Fumaric acid 110-17-8	-	-	-	-	-
Chemical name	Sweden		Switzerland	United Kingdom	
Fumaric acid 110-17-8	-		-	-	

**Biological occupational exposure limits** This product, as supplied, does not contain any hazardous materials with biological limits established by the region specific regulatory bodies.

Chemical name	European Union	Austria	Bulgaria	Croatia	Czech Republic
Fumaric acid 110-17-8	-	-	-	-	-
Chemical name	Denmark	Finland	France	Germany DFG	Germany TRGS
Fumaric acid 110-17-8	-	-	-	-	-
Chemical name	Hungary	Ireland	Italy MDLPS	Italy AIDII	
Fumaric acid 110-17-8	-	-	-	-	
Chemical name	Latvia	Luxembourg	Romania	Slovakia	
Fumaric acid 110-17-8	-	-	-	-	
Chemical name	Slovenia	Spain	Switzerland	United Kingdom	

Fumaric acid 110-17-8	-	-	-	-
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**Derived No Effect Level (DNEL) - Workers** No information available

Chemical name	Oral	Dermal	Inhalation
Fumaric acid 110-17-8	-	12 mg/kg bw/day [4] [6]	42.32 mg/m <sup>3</sup> [4] [6]

**Derived No Effect Level (DNEL) - General Public** No information available.

Chemical name	Oral	Dermal	Inhalation
Fumaric acid 110-17-8	6 mg/kg bw/day [4] [6]	-	10.43 mg/m <sup>3</sup> [4] [6]

Chemical name	Oral	Dermal	Inhalation
Fumaric acid - 110-17-8	-	-	-

**Predicted No Effect Concentration (PNEC)** No information available.

Chemical name	Freshwater	Freshwater (intermittent release)	Marine water	Marine water (intermittent release)	Air
Fumaric acid 110-17-8	-	-	-	-	-

Chemical name	Freshwater sediment	Marine sediment	Sewage treatment	Soil	Food chain
Fumaric acid 110-17-8	-	-	30 mg/L	-	-

## 8.2. Exposure controls

**Engineering controls** Ensure that eyewash stations and safety showers are close to the workstation location.

### Personal Protective Equipment

**Eye/face protection** If splashes are likely to occur, wear safety glasses with side-shields.

**Hand protection** Wear suitable gloves.

**Skin and body protection** Wear suitable protective clothing.

**Respiratory protection** Use appropriate respiratory protection.  
Acid gases filter conforming to EN 14387.

<b>General hygiene considerations</b>	Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Avoid breathing dust/fume/gas/mist/vapors/spray.
<b>Environmental exposure controls</b>	Do not allow into any sewer, on the ground or into any body of water.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

<b>Physical state</b>	Solid	
<b>Color</b>	White	
<b>Odor</b>	Odorless.	
<b>Odor Threshold</b>	No information available	
<b>Property</b>	<b>Values</b>	<b>Remarks • Method</b>
<b>Melting point / Freezing point</b>	287 °C	None known
<b>Boiling point / boiling range</b>	200°C (sublimes)	None known
<b>Flammability (solid, gas)</b>	No data available	None known
<b>Flammability Limit in Air</b>		None known
<b>Upper flammability limit</b>	No data available	
<b>Lower flammability limit</b>	No data available	
<b>Flash Point</b>	272 °C 274 °C	None known
<b>Autoignition temperature °C</b>	399 °C	None known
<b>Decomposition temperature</b>		None known
<b>pH</b>	2.1 at 4.9 g/l at 20 °C	None known
<b>pH (as aqueous solution)</b>	No data available	None known
<b>Kinematic Viscosity</b>	No data available	None known
<b>Dynamic Viscosity</b>	No Data Available	None known
<b>Water solubility</b>	Soluble in water 7 g/L at 25 °C	None known
<b>Solubility in other solvents</b>	No information available	None known
<b>Partition coefficient: n-octanol/water</b>	log Pow: 0.45 – 0.47 at 20 °C	None known
<b>Vapor Pressure</b>	2.2 hPa at 165 °C	None known
<b>Relative density</b>	1.635 g/cm <sup>3</sup> at 20 °C	None known
<b>Bulk density</b>	No data available	
<b>Liquid Density</b>	No data available	
<b>Vapor Density</b>	No data available	None known
<b>Particle characteristics</b>		
<b>Particle Size</b>	No information available	
<b>Particle Size Distribution</b>	No information available	

### 9.2. Other information

<b>Molecular Weight</b>	116.07 g/mol
<b>Molecular Formula</b>	C <sub>4</sub> H <sub>4</sub> O <sub>4</sub>

9.2.1. Information with regard to physical hazard classes  
Not applicable

9.2.2. Other safety characteristics  
No information available

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

**Reactivity** No information available.

### 10.2. Chemical stability

**Stability** Stable under normal conditions.

**Explosion Data**

**Sensitivity to mechanical impact** None.

**Sensitivity to static discharge** None.

**10.3. Possibility of hazardous reactions**

**Possibility of hazardous reactions** None under normal processing.

**10.4. Conditions to avoid**

**Conditions to avoid** Incompatible materials.

**10.5. Incompatible materials**

**Incompatible materials** None known based on information supplied.

**10.6. Hazardous decomposition products**

**Hazardous Decomposition Products** Carbon dioxide (CO<sub>2</sub>). Carbon monoxide.

## SECTION 11: Toxicological information

**11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008**

**Information on likely routes of exposure**

**Product Information**

<b>Inhalation</b>	Specific test data for the substance or mixture is not available. May cause irritation of respiratory tract. Harmful by inhalation. (based on components).
<b>Eye contact</b>	Specific test data for the substance or mixture is not available. Causes serious eye irritation. (based on components). May cause redness, itching, and pain.
<b>Skin contact</b>	Specific test data for the substance or mixture is not available. May cause irritation. Prolonged contact may cause redness and irritation.
<b>Ingestion</b>	Specific test data for the substance or mixture is not available. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

**Symptoms related to the physical, chemical and toxicological characteristics**

**Symptoms** May cause redness and tearing of the eyes. Coughing and/ or wheezing.

**Acute toxicity** Harmful by inhalation.

**Numerical measures of toxicity**

**Unknown acute toxicity**

**Component Information**

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Fumaric acid	= 9300 mg/kg ( Rat )	> 20000 mg/kg ( Rabbit )	= 1.306 mg/l ( Rat )

**Delayed and immediate effects as well as chronic effects from short and long-term exposure**



**Skin corrosion/irritation** No information available.

**Serious eye damage/eye irritation** Classification based on data available for ingredients. Causes serious eye irritation.

**Respiratory or skin sensitization** No information available.

**Germ cell mutagenicity** No information available.

Chemical name	European Union
Fumaric acid	-

**Carcinogenicity** No information available.

Chemical name	European Union
Fumaric acid	-

**Reproductive toxicity** No information available.

Chemical name	European Union
Fumaric acid	-

**STOT - single exposure** No information available.

**STOT - repeated exposure** No information available.

**Aspiration hazard** No information available.

## 11.2. Information on other hazards

### 11.2.1. Endocrine disrupting properties

**Endocrine disrupting properties** No information available.

### 11.2.2. Other information

**Other Adverse Effects** No information available.

## **SECTION 12: Ecological information**

### 12.1. Toxicity

**Ecotoxicity** Harmful to aquatic life with long lasting effects.

Chemical name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Fumaric acid	Static test EC50 - Pseudokirchneriella subcapitata - > 100 mg/l - 72h; Static test NOEC - Pseudokirchneriella	Semi-static test LC50 - Danio rerio (zebra fish) - > 100 mg/l - 96 h	-	EC50: 204 - 220mg/L (48h, Daphnia magna)

	subcapitata (green algae) - 100 mg/l - 72 h			
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**12.2. Persistence and degradability**

**Persistence/Degradability** No information available.

**12.3. Bioaccumulative potential**

**Bioaccumulation**

**Component Information**

Chemical name	Partition coefficient
Fumaric acid	0.47

**12.4. Mobility in soil**

**Mobility in Soil** The product is water soluble, and may spread in water systems.

**12.5. Results of PBT and vPvB assessment**

**PBT and vPvB assessment** UN.

Chemical name	PBT and vPvB assessment
Fumaric acid	The substance is not PBT / vPvB

**12.6. Endocrine disrupting properties**

**Endocrine disrupting properties** No information available.

**12.7. Other adverse effects**

No information available.

**SECTION 13: Disposal considerations****13.1. Waste treatment methods**

**Waste from residues/unused products** Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

**Contaminated packaging** Do not reuse empty containers.

**SECTION 14: Transport information****IATA**

- 14.1. UN number or ID number Not regulated  
 14.2. UN proper shipping name Not regulated  
 14.3. Transport hazard class(es) Not regulated  
 14.4. Packing group Not regulated  
 14.5. Environmental hazard Not applicable  
 14.6. Special precautions for user  
     Special Provisions None

**IMDG**

- 14.1. UN number or ID number Not regulated  
 14.2. UN proper shipping name Not regulated

14.3. Transport hazard class(es)	Not regulated
14.4. Packing Group	Not regulated
14.5. Environmental hazard	Not applicable
14.6. Special precautions for user	
Special Provisions	None
14.7. Maritime transport in bulk according to IMO instruments	No information available

**RID**

14.1. UN-No	Not regulated
14.2. UN proper shipping name	Not regulated
14.3. Transport hazard class(es)	Not regulated
14.4. Packing Group	Not regulated
14.5. Environmental hazard	Not applicable
14.6. Special precautions for user	
Special Provisions	None

**ADR**

14.1. UN number or ID number	Not regulated
14.2. UN proper shipping name	Not regulated
14.3. Transport hazard class(es)	Not regulated
14.4. Packing Group	Not regulated
14.5. Environmental hazard	Not applicable
14.6. Special precautions for user	
Special Provisions	None

**SECTION 15: Regulatory information****15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**

Chemical name	French RG number
Fumaric acid - 110-17-8	-

Chemical name	Netherlands - List of Carcinogens	Netherlands - List of Mutagens	Netherlands - List of Reproductive Toxins
Fumaric acid	-	-	-

**European Union**

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work.

**Authorizations and/or restrictions on use:**

This product contains one or more substance(s) subject to restriction (Regulation (EC) No. 1907/2006 (REACH), Annex XVII)

Chemical name	Restricted substance per REACH Annex XVII	Substance subject to authorization per REACH Annex XIV
Fumaric acid - 110-17-8	75.	-

**Persistent Organic Pollutants**

Not applicable

Chemical name	Persistent Organic Pollutants per (EC) 2019/1021 - Annex Number

Fumaric acid - 110-17-8	-
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Chemical name	European Export/Import Restrictions per (EC) 649/2012 - Annex Number
Fumaric acid - 110-17-8	-

Chemical name	Lower-tier requirements (tons)	Upper-tier requirements (tons)
Fumaric acid - 110-17-8	-	-

**Ozone-depleting substances (ODS) regulation (EC) 1005/2009**

Not applicable

Chemical name	Ozone depletion potential (ODP)	Ozone-depleting substances (ODS) regulation (EC) 1005/2009
Fumaric acid - 110-17-8	-	-

Chemical name	EU - Plant Protection Products (1107/2009/EC)
Fumaric acid - 110-17-8	-

Chemical name	Biocidal Products Regulation (EU) No 528/2012 (BPR)
Fumaric acid - 110-17-8	-

Chemical name	EU - Water Framework Directive (2000/60/EC)
Fumaric acid - 110-17-8	-

Chemical name	EU - Environmental Quality Standards (2008/105/EC)
Fumaric acid - 110-17-8	-

**International Inventories**

<b>TSCA</b>	Complies
<b>DSL/NDSL</b>	Complies
<b>EINECS/ELINCS</b>	Complies
<b>Japan (ENCS)</b>	Complies
<b>Inventory of Existing Chemical Substances in China</b>	Complies
<b>Korea (KECL)</b>	Complies
<b>Philippines (PICCS)</b>	Complies
<b>AIIC</b>	Complies
<b>NZIoC</b>	Complies

- **TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory**DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List**EINECS/ELINCS** - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances**ENCS** - Japan Existing and New Chemical Substances**IECSC** - China Inventory of Existing Chemical Substances**KECL** - Korean Existing Chemicals Inventory**PICCS** - Philippines Inventory of Chemicals and Chemical Substances**AIIC** - Australian Inventory of Industrial Chemicals**NZIoC** - New Zealand Inventory of Chemicals**15.2. Chemical safety assessment****Chemical Safety Report** No information available**SECTION 16: Other information**

**Key or legend to abbreviations and acronyms****Full text of H-Statements referred to under section 3**

H319 - Causes serious eye irritation

**Legend**

SVHC: Substances of Very High Concern for Authorization:

PBT: Persistent, Bioaccumulative, and Toxic (PBT) Substances

vPvB: Very Persistent and very Bioaccumulative (vPvB) Substances

**Legend Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	*	Skin designation
+	Sensitizers		

Classification procedure	
Classification according to Regulation (EC) No. 1272/2008 [CLP]	Method Used
Acute oral toxicity	Calculation method
Acute dermal toxicity	Calculation method
Acute inhalation toxicity - gas	Calculation method
Acute inhalation toxicity - vapor	Calculation method
Acute inhalation toxicity - dust/mist	Calculation method
Skin corrosion/irritation	Calculation method
Serious eye damage/eye irritation	Calculation method
Respiratory sensitization	Calculation method
Skin sensitization	Calculation method
Mutagenicity	Calculation method
Carcinogenicity	Calculation method
Reproductive toxicity	Calculation method
STOT - single exposure	Calculation method
STOT - repeated exposure	Calculation method
Acute aquatic toxicity	Calculation method
Chronic aquatic toxicity	Calculation method
Aspiration hazard	Calculation method
Ozone	Calculation method

**Key literature references and sources for data used to compile the SDS**

Agency for Toxic Substances and Disease Registry (ATSDR)

U.S. Environmental Protection Agency ChemView Database

European Food Safety Authority (EFSA)

European Chemicals Agency (ECHA) Committee for Risk Assessment (ECHA\_RAC)

European Chemicals Agency (ECHA) (ECHA\_API)

Environmental Protection Agency

Acute Exposure Guideline Level(s) (AEGl(s))

U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act

U.S. Environmental Protection Agency High Production Volume Chemicals

Food Research Journal

Hazardous Substance Database

International Uniform Chemical Information Database (IUCLID)

National Institute of Technology and Evaluation (NITE)

Australia National Industrial Chemicals Notification and Assessment Scheme (NICNAS)

NIOSH (National Institute for Occupational Safety and Health)

National Library of Medicine's ChemID Plus (NLM CIP)

National Library of Medicine's PubMed database (NLM PUBMED)

U.S. National Toxicology Program (NTP)

New Zealand's Chemical Classification and Information Database (CCID)

Organization for Economic Co-operation and Development Environment, Health, and Safety Publications

Organization for Economic Co-operation and Development High Production Volume Chemicals Program

Organization for Economic Co-operation and Development Screening Information Data Set  
World Health Organization

**Issuing Date** 08-Aug-2024

**Revision Date** 20-Sep-2024

**This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006**

**Disclaimer**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

**End of Safety Data Sheet**