

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

1.1 Product identifier

Material Name

Succinic Acid

Synonyms

Butanedioic acid; Amber acid; 1,2-Ethanedicarboxylic acid; Ethylenesuccinic acid; Wormwood; Wormwood acid

Chemical Family

carboxylic acids, aliphatic

Substance Registration Number(s)

Succinic acid: 01-2119896114-34-0004

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

Identified uses

Formulation stage, manufacturing, Industrial End-use stage cleaning, Professional End-use stage cleaning, Consumer End-use stage cleaning, Laboratory use, Use as a monomer, Use as an intermediate Further information: see exposure scenarios attached to this safety data sheet.

Uses advised against

None known.

1.3 Details of the supplier of the safety data sheet

Myriant Corporation
3 Batterymarch Park, 3rd Floor
Quincy, MA 02169
Phone: +1 617-657-5200
E-mail: productsafety@myriant.com

Exponent International Limited
1 Pride Point Drive
Pride Park
Derby DE24 8BX, UK
Phone: +44 (0) 1332 868005

1.4 Emergency telephone number

CHEMTREC North America: 1-800-424-9300
CHEMTREC International: +1-703-527-3887

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

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

Serious Eye Damage/Eye Irritation - Category 1

2.2 Label elements

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

Hazard symbols



Signal word

Danger

Hazard statements

H318 Causes serious eye damage

Precautionary statements

Prevention

P280 Wear protective gloves/protective clothing/eye protection/face protection

Response

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

P310 Immediately call a POISON CENTER or doctor

Storage

None needed according to classification criteria

Disposal

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

2.3 Other hazards

May form combustible dust concentrations in air.

SECTION 3: Composition / information on ingredients

CAS EC No Registration No	Component Name Synonyms	1272/2008 (CLP)	Percent
110-15-6 203-740-4 01-2119896114-34-0004	Succinic acid	Eye Dam. 1 - H318	>= 99.5

SECTION 4: First aid measures

4.1 Description of first aid measures

Inhalation

If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.

Skin

Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get immediate medical attention. Thoroughly clean and dry contaminated clothing before reuse.

Eyes

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.

Ingestion

Get medical attention, if needed.

4.2 Most Important Symptoms/Effects

Acute

Causes serious eye damage.

Delayed

No information on significant adverse effects.

4.3 Indication of Immediate Medical Attention and Special Treatment

Treat symptomatically and supportively.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Use carbon dioxide, regular dry chemical, regular foam or water.

Unsuitable Extinguishing Media

Do not use high-pressure water streams.

5.2 Special hazards arising from the substance or mixture

Combustible Dust. Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

Combustion

Oxides of carbon, low molecular weight hydrocarbons

5.3 Advice for firefighters

Wear full protective fire fighting gear including self contained breathing apparatus (SCBA) for protection against possible exposure.

Fire Fighting Measures

Move container from fire area if it can be done without risk. Do not scatter spilled material with high-pressure water streams. Dike for later disposal. Use extinguishing agents appropriate for surrounding fire. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Wear personal protective clothing and equipment, see Section 8.

6.2 Environmental precautions

Collect spillage. Avoid release to the environment. In case of spillage, stop the flow of material and block any potential routes to water systems. Keep out of water supplies and sewers.

6.3 Methods and Materials for Containment and Cleaning Up

Keep unnecessary people away, isolate hazard area and deny entry. Avoid contact with eyes, skin and clothing. Do not breathe dust. If respirable dusts are generated, respiratory protection may be needed. Only personnel trained for the hazards of this material should perform clean up and disposal. Collect spilled material using mechanical equipment. Minimize dust generation and accumulation. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). Use non-sparking tools and equipment.

6.4 Reference to other sections

Safe handling: see section 7. Personal protection equipment (PPE): see section 8. Disposal: see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Do not handle until all safety precautions have been read and understood. Keep away from all ignition sources. Do not breathe dust. Use methods to minimize dust. Avoid contact with skin and eyes. Wash thoroughly after handling. Do not eat, drink, or smoke when using this product. Always wear recommended personal protective equipment. Wear personal protective clothing and equipment, see Section 8. Minimize dust generation and accumulation. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Take precautionary measures against static discharges.

7.2 Conditions for safe storage, including any incompatibilities

None needed according to classification criteria

Store in a cool, dry place. Store in a well-ventilated area. Keep separated from incompatible substances. Store with acids. Keep container tightly closed. Empty containers may contain product residue. Do not reuse containers. Store and handle in accordance with all current regulations and standards.

Incompatible Materials

strong oxidizing agents, alkali solutions

7.3 Specific end use(s)

Industrial, Professional, Consumer End-use stage cleaning, Laboratory use, Use as an intermediate, Use as a monomer, manufacturing, Formulation stage

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Component Exposure Limits

EU, Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Netherlands, Portugal, Spain, Sweden and United Kingdom have not developed exposure limits for any of this product's components.

Biological limit value

There are no biological limit values for any of this product's components.

Derived No Effect Levels (DNELs)

DNEL Worker - dermal, short-term - systemic: 67 mg/kg bw/day; DNEL Worker - inhalative, short-term - local and systemic: 10 mg/m³; DNEL Worker - dermal, long-term - systemic: 71 mg/kg bw/day; DNEL Worker - inhalative, long-term - local and systemic: 10 mg/m³; DNEL Consumer - dermal, short-term - systemic: 67 mg/kg bw/day; DNEL Consumer - inhalative, short-term - local and systemic: 10 mg/m³; DNEL Consumer - oral, short-term - systemic: 67 mg/kg bw/day; DNEL Consumer - dermal, long-term - systemic: 43 mg/kg bw/day; DNEL Consumer - inhalative, long-term - local and systemic: 10 mg/m³; DNEL Consumer - oral, long-term - systemic: 43 mg/kg bw/day

Predicted No Effect Concentrations (PNECs)

PNEC aquatic, freshwater: 0.1 mg/L; PNEC aquatic, marine water: 0.01 mg/L; PNEC aquatic, intermittent release: 1 mg/L; PNEC sediment, freshwater: 0.079 mg/kg dry weight; PNEC sediment, marine water: 0.0079 mg/kg dry weight; PNEC soil: 0.0177 mg/kg dry weight; PNEC sewage treatment plant (STP): 3 mg/L; PNEC Secondary Poisoning: No indication of bioaccumulation potential

8.2 Exposure Controls

Engineering controls

Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits.

Eye/face protection

Wear splash resistant safety goggles with a faceshield.

Skin Protection

Wear appropriate chemical resistant clothing.

Respiratory Protection

A NIOSH approved air-purifying respirator with an appropriate cartridge or canister may be appropriate under certain circumstances where airborne concentrations are expected to exceed exposure limits.

Glove Recommendations

Wear appropriate chemical resistant gloves.

Environmental exposure controls

Avoid release to the environment. Do not flush into sanitary sewer systems, drains or surface water.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	white crystalline solid	Physical State	solid
Odor	odorless	Color	white
Odor Threshold	Not available	pH	2.7
Melting Point	185 - 187 °C (365-368.6 °F)	Boiling Point	235 °C (455 °F)
Freezing point	185 - 187 °C	Evaporation Rate	Not available
Boiling Point Range	Not available	Flammability (solid, gas)	Not flammable
Autoignition	None (determined up to 220 °C)	Flash Point	Not applicable
Lower Explosive Limit	Non-explosive	Decomposition	Not available
Upper Explosive Limit	Non-explosive	Vapor Pressure	1.9E-07 mmHg
Vapor Density (air=1)	Not available	Specific Gravity (water=1)	1.564 (15 °C)
Water Solubility	83 g/L (@ 25 °C)	Partition coefficient: n-octanol/water	0.257
Viscosity	Not applicable	Solubility (Other)	Not available
Density	1.6 g/cc at 25 °C	KOC	1419.06 (estimated)
Log KOW	-0.59	Molecular Formula	C4-H6-O4
Molecular Weight	118 g/mol		

9.2 Other information

No additional information available.

SECTION 10: Stability and reactivity

10.1 Reactivity

No reactivity hazard is expected.

10.2 Chemical stability

Stable at normal temperatures and pressure.

10.3 Possibility of hazardous reactions

Hazardous polymerization will not occur.

10.4 Conditions to avoid

Avoid heat, flames, sparks and other sources of ignition. Avoid contact with incompatible materials. Avoid generating dust.

10.5 Incompatible materials

strong oxidizing agents, alkali solutions

10.6 Hazardous decomposition products

Oxides of carbon, low molecular weight hydrocarbons

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Component Analysis - LD50/LC50

The components of this material have been reviewed in various sources and the following selected endpoints are published:

Succinic acid (110-15-6)

Oral LD50 Rat 6740 mg/kg bw

Dermal LD50 6740 mg/kg bw

Inhalation LC50 Rat 1284 mg/m³ air 4 h

Irritation/Corrosivity Data

Causes serious eye damage. Not irritating to respiratory system, skin.

Respiratory Sensitization

Reported to be non-sensitizing.

Dermal Sensitization

Reported to be non-sensitizing.

Germ Cell Mutagenicity

Ames test found to be negative.

Tumorigenic Data

Not classified.

Component Carcinogenicity

None of this product's components are listed by IARC or DFG.

Not classified.

Reproductive toxicity

Not classified.

Specific Target Organ Toxicity - Single Exposure

No target organs identified.

Specific Target Organ Toxicity - Repeated Exposure

No target organs identified.

Aspiration hazard

No data available.

Additional Data

No additional information available.

SECTION 12: Ecological information

12.1 Toxicity

Avoid release to the environment.

Component Analysis - Aquatic Toxicity

Succinic acid	110-15-6
Fish:	LC50 96 hr Danio rerio >100 mg/L [semi-static]
Algae:	EC50 72 hr Pseudokirchnerella subcapitata >100 mg/L [static]
Invertebrate:	EC50 48 hr Daphnia magna >100 mg/L [semi-static]; EC50 48 hr Daphnia magna 374.2 mg/L [static]

12.2 Persistence and degradability

Readily biodegradable; not persistent.

12.3 Bioaccumulative potential

Low soil Adsorption; low potential to bioaccumulate

12.4 Mobility in soil

No information available for the product.

12.5 Results of PBT and vPvB assessment

Not fulfilling PBT and vPvB criteria.

EU - Interim Strategy for Management of PBT and vPvB Substances

No components of this material are listed.

12.6 Other adverse effects

No additional information available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

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

SECTION 14: Transport information

Component Marine Pollutants (IMDG)

Not regulated as dangerous goods.

		ADR	RID	ICAO	IATA	ADN	IMDG
14.1	UN Number	Not regulated for transport	Not regulated for transport	Not regulated for transport	Not regulated for transport	Not regulated for transport	Not regulated for transport
14.2	UN Proper Shipping	--	--	--	--	--	--

	Name						
14.3	Transport Hazard Class(es)	--	--	--	--	--	--
14.4	Packing Group	--	--	--	--	--	--
14.5	Environmental Hazards	--	--	--	--	--	--
14.6	Special Precautions For User	--	--	--	--	--	--
14.7	Transport in Bulk According to Annex II or MARPOL 73/78 and the IBC Code	--	--	--	--	--	--
14.8	Additional information	--	--	--	--	--	--

International Bulk Chemical Code

This material does not contain any chemicals required by the IBC Code to be identified as dangerous chemicals in bulk.

SECTION 15: Regulatory information

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

EU - REACH (1907/2006) - Annex XIV List of Substances Subject to Authorization

No components of this material are listed.

EU - REACH (1907/2006) - Article 59(1) Candidate List of Substances Subject to Authorization

No components of this material are listed.

EU - REACH (1907/2006) - Annex XVII Restrictions of Certain Dangerous Substances, Mixtures and Articles

No components of this material are listed.

EU - Biocides (1451/2007) - Existing Active Substance

Succinic acid	110-15-6
	Present

Germany Regulations

Germany Water Classification

Succinic acid (110-15-6)

ID Number 476 , hazard class 1 - low hazard to waters

Denmark Regulations

No components of this material are listed.

15.2 Chemical Safety Assessment

For this substance a chemical safety assessment has been carried out.

Component Analysis - Inventory

Succinic acid (110-15-6)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR - KECI/KECL	KR - TCCA	CN	NZ	MX	TW
Yes	DSL	EIN	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes

Section 16 - OTHER INFORMATION

16.1 Indication of changes

Supersedes SDS written on July 11, 2013

16.2 Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CLP - Classification, Labelling, and Packaging; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSD - Dangerous Substance Directive; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; LLV - Level Limit Value; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH - Philippines; RCRA - Resource Conservation and Recovery Act; REACH- Registration, Evaluation, Authorisation, and restriction of Chemicals; RID - European Rail Transport; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States

16.3 Key literature references and sources for data

Available upon request.

16.4 Methods Used for Classification of Mixture According to Regulation (EC) No 1272/2008

Available upon request.

16.5 Relevant R-, H- and EUH-phrases (Number and full text)

H318 Causes serious eye damage

16.6 Training advice

Read the Safety Data Sheet before handling product.

16.7 Further Information

Disclaimer:

Reasonable care has been taken in the preparation of this information; however, the manufacturer makes no warranty whatsoever including the warranty of merchantability, expressed or implied, with respect to this information. The manufacturer makes no representations and assumes no liability for any direct, incidental, consequential, or other such damages resulting from its use or misuse.