

MATERIAL SAFETY DATA SHEET

CHEMICAL PRODUCT FOR INDUSTRIAL USE




According to Regulation EC No 1907/2006 of the European Parliament and of the Council of 18 December 2006 (REACH).

SUCCINIC ACID

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : SUCCINIC ACID
 Chemical name : SUCCINIC ACID
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2. HAZARDS IDENTIFICATION

Classification Regulation	Classification, Symbols, R Phrases, S Phrases, Signal Words, Hazard Statements, and Precautionary Statements
According to Regulation (EC) 1272/2008	Skin irritation (category 2) Serious eye damage (category 1) Xi: Irritant R Phrases: R36/37/38, R41 S Phrases: S26, S36/37/39 
According to Directive 67/548/CEE	Skin and respiratory irritation. May cause serious eye damage.
GHS	Pictogram:  Signal word: Danger Hazard statements: H315, H318, H335 Precautionary statements: P261, P280, P305 + P351 + P338
OSHA Hazards	Irritant
HMIS Classification	Health hazard: 2 Flammability: 0 Physical hazards: 0
NFPA Rating	Health hazard: 2 Fire: 0 Reactivity Hazard: 0
WHMIS Classification	Class D2B (eye irritation) 

Most Important Hazards : May be harmful if inhaled. Causes respiratory tract irritation. May be harmful if swallowed. May be harmful if absorbed through skin. May cause skin irritation. Causes eye irritation.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : Butanedioic acid
Formula : C₄H₆O₄
Molecular Weight : 118.09 g/mol

CAS-No	EC-No	Index-No	Classification	Concentration
Succinic Acid				
110-15-6	203-740-4	---	Skin Irrit. 2; Eye Dam. 1; STOT SE 3; H315, H318, H335 Xi, R36/37/38 – R41	90%-100%

4. FIRST AID MEASURES

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled

If breathed in, move person into fresh air. If not breathing give artificial respiration Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIRE-FIGHTING MEASURES

Flash point No data available

Flammable Limits in Air

Lower (LFL): No data available

Upper (UFL): No data available

Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Fire-Fighting Instructions

Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters

Wear self contained breathing apparatus for firefighting if necessary.

Hazardous Combustion Products

Hazardous decomposition products formed under fire conditions. - Carbon oxides.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Use personal protective equipment. Avoid dust formation. Avoid breathing dust. Ensure adequate ventilation.

Environmental precautions

Do not let product enter drains.

Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for preventive fire protection.

Conditions for safe storage

Keep container tightly closed in a dry and well-ventilated place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Contains no substances with occupational exposure limit values.

Exposure Limit

ACGIH: Not established

OSHA: Not established

Engineering Measures:

No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Personal protective equipment

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a dust mask type N95 (US) or type P3 (EN 143) respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection

Handle with gloves.

Eye protection

Safety glasses with side-shields conforming to EN166.

Skin and body protection

Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Powder

Color white

Odor/Odor threshold

Odorless

Safety data

pH (1% in water)

2.4 – 2.8

Melting point

184 - 192°C

Boiling point

No data available

Decomposition temperature

No data available

Auto-ignition temperature	No data available
Explosion properties	
– Sensitivity to mechanical impact	No data available
– Sensitivity to static discharge	No data available
Density/Specific gravity	No data available
Evaporation rate	No data available
Coefficient of water/oil distribution	No data available
Vapor pressure	No data available
Vapor density	No data available
Kst, Pmax	Kst = 51 bar.m/s - Pmax = 7,4 bar
Min. Flammability Energy	> 1 000 mJ
Min. Flammability Temp. (cloud)	620°C
Water solubility	Moderately soluble

10. STABILITY AND REACTIVITY

Chemical stability

Stable under recommended storage conditions.

Conditions to avoid

No data available.

Materials to avoid

Bases, Oxidizing agents, Reducing agents.

Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides.

Hazardous polymerization

Under normal conditions of storage and use, hazardous polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

Routes of Entry

Inhalation, ingestion, and dermal and eye contact.

Acute toxicity

Chemical Name/CAS No.	Route & Species	Value
Succinic acid/ 110-15-6	Oral (Rat)	LD50 = 2,260 mg/kg

Skin corrosion/irritation

Causes skin irritation.

Serious eye damage/eye irritation

Eyes – rabbit - Severe eye irritation.

Respiratory or skin sensitization

No data available.

Germ cell mutagenicity

Genotoxicity in vitro - Human - fibroblast.

DNA inhibition.

Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity

No data available.

Teratogenicity/Embryotoxicity

No data available.

Specific target organ toxicity - single exposure (GHS)

Inhalation - May cause respiratory irritation.

Specific target organ toxicity - repeated exposure (GHS)

No data available.

Aspiration hazard

No data available.

Toxicologically synergistic materials

No data available.

Potential health effects

Inhalation May be harmful if inhaled. Causes respiratory tract irritation.

Ingestion May be harmful if swallowed.

Skin May be harmful if absorbed through skin. Causes skin irritation.

Eyes Causes eye irritation.

12. ECOLOGICAL INFORMATION

Toxicity

Not available.

Persistence and degradability

Not available.

Bioaccumulative potential

Not available.

Mobility in soil

Not available.

PBT and vPvB assessment

Not available.

Other adverse effects

Not available.

13. DISPOSAL CONSIDERATIONS

Product

Observe all federal, state, and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material.



Contaminated packaging


Dispose of as unused product.

14. TRANSPORT INFORMATION

Regulation	Proper Shipping Name	UN Number	Hazard Class	PG
DOT (US)	Not regulated	---	---	---
TDG (Canada):	Not regulated	---	---	---
IMDG (International - Maritime):	Not regulated	---	---	---
IATA	Not regulated	---	---	---

15. REGULATORY INFORMATION

Country	Regulatory Information
Succinic Acid	
EU	<p>According to Regulation EC No 1907/2006 of the European Parliament and of the Council of 18 December 2006 (REACH).</p> <p>Substance classifying According to Regulation (EC) 1272/2008 Skin irritation (category 2) Serious eye damage (category 1)</p>  <p>Xi Irritant</p> <p>R Phrases R36/37/38 Irritating to eyes, respiratory system and skin R41 Risk of serious damage to eyes</p> <p>S Phrases S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.</p> <p>According to Directive 67/548/CEE Skin and respiratory irritation. May cause serious eye damage.</p>
GHS	<p>Pictogram</p>  <p>Signal word Danger</p> <p>Hazard statement(s) H315 Causes skin irritation. H318 Causes serious eye damage. H335 May cause respiratory irritation.</p> <p>Precautionary statement(s) P261 Avoid breathing dust/fume/gas/mist/vapours/spray. P280 Wear protective gloves/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. Continue rinsing.</p>
US	<p>OSHA Hazards Irritant</p> <p>SARA 302 Components SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.</p> <p>SARA 313 Components SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.</p> <p>SARA 311/312 Hazards Acute Health Hazard</p> <p>Massachusetts Right To Know Components No components are subject to the Massachusetts Right to Know Act.</p> <p>Pennsylvania Right To Know Components Succinic acid CAS-No. 110-15-6 Revision Date</p>

	<p>New Jersey Right To Know Components Succinic acid CAS-No. 110-15-6 Revision Date</p> <p>California Prop. 65 Components This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.</p>
Canada	<p>WHMIS Class D2B (Eye irritation)</p> <p>DSL Status All components of this product are on the Canadian DSL list.</p> <p>This product has been classified in accordance with the hazard criteria of the <i>Controlled Products Regulations</i> and the MSDS contains all the information required by the <i>Controlled Products Regulations</i>.</p> 

16. OTHER INFORMATION

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Bioamber shall not be held liable for any damage resulting from handling or from contact with the above product.