SUCCINIC ANHYDRIDE (1,4-13C2, 99%)

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830 and according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 02/06/2015 Revision date: 16/10/2018 Supersedes: 09/01/2017 Version: 2.1

CLM-9685

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

1.1. Product identifier

Product form	:	Substance
Substance name	:	SUCCINIC ANHYDRIDE (1,4-13C2, 99%)
EC Index-No.	:	607-103-00-5 (Unlabeled)
EC-No.	:	203-570-0 (Unlabeled)
CAS-No.	:	67519-25-9
REACH registration No	:	01-2119485841-30
Product code	:	CLM-9685
Formula	:	C2*C2H4O3
Synonyms	:	Dihydro-2,5-furandione

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

1.2.1. Relevant identified uses

Main use category	:	Professional use
Industrial/Professional use spec	:	For professional use only

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Cambridge Isotope Laboratories, Inc.
50 Frontage Road
Andover, MA 01810
USA

USA: 1-800-322-1174 Int: 1-978-749-8000
cilsales@isotope.com www.isotope.com

Emergency telephone number

Emergency numbers:

Chemtrec: 1-800-424-9300 (24 hours)
International: 1-703-741-5970 (24 hours)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

Acute Tox. 4 (Oral)	H302
Skin Corr. 1C	H314
STOT SE 3	H335

Full text of hazard classes and H-statements : see section 16

Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD]

C; R35
Xn; R22
Xi; R37

Full text of R-phrases: see section 16

GHS-US classification

Acute Tox. 4 (Oral)	H302
Skin Corr. 1A	H314
STOT SE 3	H335

Full text of H statements : see section 16

Adverse physicochemical, human health and environmental effects

No additional information available

2.2. Label elements

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

Hazard pictograms (CLP) :

GHS05 GHS07

Signal word (CLP) : Danger

Hazard statements (CLP) : H302 - Harmful if swallowed
H314 - Causes severe skin burns and eye damage
H335 - May cause respiratory irritation

Precautionary statements (CLP) : P260 - Do not breathe dust, fume, gas, mist, spray, vapors.
P264 - Wash Both hands thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.
P271 - Use only outdoors or in a well-ventilated area.
P280 - Wear protective clothing, protective gloves.
P301+P312 - IF SWALLOWED: Call a doctor, a POISON CENTER if you feel unwell.
P301+P330+P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

GHS-US labeling

Hazard pictograms (GHS-US) :

GHS05 GHS07

Signal word (GHS-US) : Danger

Hazard statements (GHS-US) : H302 - Harmful if swallowed
H314 - Causes severe skin burns and eye damage
H335 - May cause respiratory irritation

Precautionary statements (GHS-US) : P260 - Do not breathe dust, fume, gas, mist, spray, vapors.
P261 - Avoid breathing dust, fume, gas, mist, spray, vapors.
P264 - Wash Both hands thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.
P271 - Use only outdoors or in a well-ventilated area.
P280 - Wear protective clothing, protective gloves.
P301+P312 - If swallowed: Call a poison center or doctor if you feel unwell
P301+P330+P331 - If swallowed: rinse mouth. Do NOT induce vomiting
P303+P361+P353 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing
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
P312 - Call a poison center or doctor if you feel unwell
P321 - Specific treatment (see Hazard pictograms (CLP) on this label)
P330 - Rinse mouth.
P363 - Wash contaminated clothing before reuse.
P403+P233 - Store in a well-ventilated place. Keep container tightly closed.
P405 - Store locked up.
P501 - Dispose of contents/container to Comply with applicable regulations

2.3. Other hazards

No additional information available

SECTION 3: Composition/Information on ingredients

3.1. Substances

Name	Product identifier	%	Classification according to Directive 67/548/EEC
SUCCINIC ANHYDRIDE (1,4-13C2, 99%)	(CAS-No.) 67519-25-9 (EC-No.) 203-570-0 (Unlabeled) (EC Index-No.) 607-103-00-5 (Unlabeled) (REACH-no) 01-2119485841-30	100	C; R35 Xn; R22 Xi; R37

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
SUCCINIC ANHYDRIDE (1,4-13C2, 99%)	(CAS-No.) 67519-25-9 (EC-No.) 203-570-0 (Unlabeled) (EC Index-No.) 607-103-00-5 (Unlabeled) (REACH-no) 01-2119485841-30	100	Acute Tox. 4 (Oral), H302 Skin Corr. 1C, H314 STOT SE 3, H335

Full text of R- and H- phrases: see section 16

Name	Product identifier	%	GHS-US classification
SUCCINIC ANHYDRIDE (1,4-13C2, 99%) (Main constituent)	(CAS-No.) 67519-25-9	100	Acute Tox. 4 (Oral), H302 Skin Corr. 1A, H314 STOT SE 3, H335

Full text of H-phrases: see section 16

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general : Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

First-aid measures after inhalation : If breathed in, move person to fresh air. If not breathing, give artificial respiration. Consult a physician.

First-aid measures after skin contact : Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Consult a physician.

First-aid measures after eye contact : Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Continue rinsing eyes during transport to hospital.

First-aid measures after ingestion : Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

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

Symptoms/effects after inhalation : May be harmful if inhaled. May cause respiratory tract irritation.

Symptoms/effects after skin contact : Causes severe skin burns.

Symptoms/effects after eye contact : Causes serious eye damage.

Symptoms/effects after ingestion : Harmful if swallowed.

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

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Use water spray, alcohol-resistant foam, dry chemical, or carbon dioxide.

5.2. Special hazards arising from the substance or mixture

No additional information available

5.3. Advice for firefighters

Firefighting instructions : Wear self contained breathing apparatus for fire fighting if necessary.

Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures : Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Avoid breathing dust.

6.1.2. For emergency responders

No additional information available

6.2. Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3. Methods and material for containment and cleaning up

For containment : Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4. Reference to other sections

No additional information available

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed : Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs. Provide appropriate exhaust ventilation at places where dust is formed.

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

7.2. Conditions for safe storage, including any incompatibilities

Technical measures : Keep container tightly closed in a cool, dry and well-ventilated place.

Storage conditions : Store at room temperature away from light and moisture.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

SUCCINIC ANHYDRIDE (1,4-13C2, 99%) (67519-25-9)	
DNEL/DMEL (Workers)	
Acute - systemic effects, dermal	167 mg/kg bodyweight/day
Acute - systemic effects, inhalation	10 mg/m³
Acute - local effects, inhalation	0.41 mg/m³
Long-term - systemic effects, dermal	83.3 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	10 mg/m³
Long-term - local effects, inhalation	0.41 mg/m³
PNEC (Water)	
PNEC aqua (freshwater)	0.1 mg/l
PNEC aqua (marine water)	0.01 mg/l
PNEC aqua (intermittent, marine water)	1 mg/l
PNEC (STP)	
PNEC sewage treatment plant	3 mg/l

8.2. Exposure controls

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

Personal protective equipment : Gloves. Safety glasses. Protective clothing. Respiratory protection of the dependent type.

Materials for protective clothing : Wear suitable protective clothing and gloves.

Hand protection : Wear suitable protective clothing and gloves.

Eye protection : Wear safety glasses with side shields (or goggles) and a face shield.

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

Respiratory protection : When appropriate, use NIOSH/CEN approved respirator.

Environmental exposure controls : Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Solid

Appearance : Crystalline

Molecular mass : 102.06 g/mol (Labeled)

Color : White

Odor : Pungent

Odor threshold : No data available

pH : 2.7 at 10 g/l at 20 °C (68 °F)

Relative evaporation rate (butyl acetate=1) : No data available

Melting point	:	118 - 120 °C (244 - 248 °F) - lit.
Freezing point	:	No data available
Boiling point	:	261 °C (502 °F) - lit.
Flash point	:	157 °C (315 °F)
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
Flammability (solid, gas)	:	No data available
Vapor pressure	:	1 hPa (1 mmHg) at 92 °C (198 °F)
Relative vapor density at 20 °C	:	No data available
Relative density	:	No data available
Solubility	:	Water: 62.9 g/l at 20 °C (68 °F) - OECD Test Guideline 105
Log Pow	:	2.44 at 40 °C (104 °F)
Log Kow	:	No data available
Viscosity, kinematic	:	No data available
Viscosity, dynamic	:	No data available
Explosive properties	:	No data available
Oxidizing properties	:	No data available
Explosion limits	:	No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No additional information available

10.2. Chemical stability

Five years after receipt if stored as stated in "Storage" section. Re-QC after 5 years.

10.3. Possibility of hazardous reactions

No additional information available

10.4. Conditions to avoid

No additional information available

10.5. Incompatible materials

Strong oxidizing agents, Alcohols, Amines.

10.6. Hazardous decomposition products

Carbon oxides (CO, CO2).

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Oral: Harmful if swallowed.

SUCCINIC ANHYDRIDE (1,4-13C2, 99%) (67519-25-9)	
LD50 oral rat	1794.9 mg/kg - male and female (OECD Test Guideline 401)
LD50 dermal rat	> 2000 mg/kg - male and female (OECD Test Guideline 402)
ATE CLP (oral)	1794.900 mg/kg body weight

Skin corrosion/irritation	:	Skin - in vitro assay. Result: Corrosive. (OECD Test Guideline 431) No data available pH: 2.7 at 10 g/l at 20 °C (68 °F)
Serious eye damage/irritation	:	Eyes - Rabbit Result: Corrosive No data available pH: 2.7 at 10 g/l at 20 °C (68 °F)
Respiratory or skin sensitization	:	in vivo assay - Mouse. Result: May cause sensitisation by skin contact. (OECD Test Guideline 429)
Germ cell mutagenicity	:	Reverse Mutation Assays. S. typhimurium result: negative
Carcinogenicity	:	This product is or contains a component that is not classifiable as to its carcinogenicity on its IARC, ACGIH, NTP, or EPA classification.
Reproductive toxicity	:	Not available
Specific target organ toxicity – single exposure	:	May cause respiratory irritation. May cause respiratory irritation

Specific target organ toxicity – repeated exposure	:	Repeated dose toxicity Rat - male and female - Oral - OECD Test Guideline 408 No data available
Aspiration hazard	:	Not classified
Potential Adverse human health effects and symptoms	:	Burning sensation. Cough. Laryngitis. Wheezing. Spasm. Shortness of breath. Inflammation and edema of the larynx. Inflammation and edema of the bronchi. Pneumonitis. Pulmonary edema. Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.
IARC group	:	3
Symptoms/effects after inhalation	:	May be harmful if inhaled. May cause respiratory tract irritation.
Symptoms/effects after skin contact	:	Causes severe skin burns.
Symptoms/effects after eye contact	:	Causes serious eye damage.
Symptoms/effects after ingestion	:	Harmful if swallowed.

SECTION 12: Ecological information

12.1. Toxicity

SUCCINIC ANHYDRIDE (1,4-13C2, 99%) (67519-25-9)	
LC50 fish 1	> 100 mg/l semi-static test LC50 - Danio rerio (zebra fish) - 96 h (OECD Test Guideline 203) Remarks: Read-across (Analogy)
EC50 Daphnia 1	> 100 mg/l Immobilization EC50 - Daphnia magna (Water flea) - 48 h (OECD Test Guideline 202) Remarks: Read-across (Analogy)
EC50 other aquatic organisms 1	> 100 mg/l Growth inhibition EC50 - Pseudokirchneriella subcapitata - 72 h (OECD Test Guideline 202) Remarks: Read-across (Analogy)

12.2. Persistence and degradability

SUCCINIC ANHYDRIDE (1,4-13C2, 99%) (67519-25-9)	
Persistence and degradability	Aerobic - exposure time: 28 d.
Biodegradation	96.55 % - Readily biodegradable Remarks: Read-across (Analogy)

12.3. Bioaccumulative potential

SUCCINIC ANHYDRIDE (1,4-13C2, 99%) (67519-25-9)	
Log Pow	2.44 at 40 °C (104 °F)
Bioaccumulative potential	Not available.

12.4. Mobility in soil

SUCCINIC ANHYDRIDE (1,4-13C2, 99%) (67519-25-9)	
Ecology - soil	Not available.

12.5. Results of PBT and vPvB assessment

No additional information available

12.6. Other adverse effects

Other adverse effects : Not available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Regional legislation (waste)	:	Waste materials should be disposed of under conditions which meet Federal, State, and local environmental control regulations.
Product/Packaging disposal recommendations	:	Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.
Ecology - waste materials	:	Dispose of as unused product.

SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

14.1. UN number

UN-No.(DOT)	:	3261
DOT NA no.		UN3261

14.2. UN proper shipping name

Proper Shipping Name (DOT)	:	Corrosive solid, acidic, organic, n.o.s.
Class (DOT)	:	8 - Class 8 - Corrosive material 49 CFR 173.136

Hazard labels (DOT)	:	8 - Corrosive

DOT Symbols	:	G - Identifies PSN requiring a technical name
Packing group (DOT)	:	II - Medium Danger
DOT Special Provisions (49 CFR 172.102)	:	IB8 - Authorized IBCs: Metal (11A, 11B, 11N, 21A, 21B, 21N, 31A, 31B and 31N); Rigid plastics (11H1, 11H2, 21H1, 21H2, 31H1 and 31H2); Composite (11HZ1, 11HZ2, 21HZ1, 21HZ2, 31HZ1 and 31HZ2); Fiberboard (11G); Wooden (11C, 11D and 11F); Flexible (13H1, 13H2, 13H3, 13H4, 13H5, 13L1, 13L2, 13L3, 13L4, 13M1 or 13M2). IP2 - When IBCs other than metal or rigid plastics IBCs are used, they must be offered for transportation in a closed freight container or a closed transport vehicle. IP4 - Flexible, fiberboard or wooden IBCs must be sift-proof and water-resistant or be fitted with a sift-proof and water-resistant liner. T3 - 2.65 178.274(d)(2) Normal..... 178.275(d)(2) TP33 - The portable tank instruction assigned for this substance applies for granular and powdered solids and for solids which are filled and discharged at temperatures above their melting point which are cooled and transported as a solid mass. Solid substances transported or offered for transport above their melting point are authorized for transportation in portable tanks conforming to the provisions of portable tank instruction T4 for solid substances of packing group III or T7 for solid substances of packing group II, unless a tank with more stringent requirements for minimum shell thickness, maximum allowable working pressure, pressure-relief devices or bottom outlets are assigned in which case the more stringent tank instruction and special provisions shall apply. Filling limits must be in accordance with portable tank special provision TP3. Solids meeting the definition of an elevated temperature material must be transported in accordance with the applicable requirements of this subchapter.
DOT Packaging Exceptions (49 CFR 173.xxx)	:	154
DOT Packaging Non Bulk (49 CFR 173.xxx)	:	212
DOT Packaging Bulk (49 CFR 173.xxx)	:	240

14.3. Additional information

Other information	:	No supplementary information available.
Special transport precautions	:	Not dangerous goods.

Overland transport

Packing group (ADR)	:	II
Class (ADR)	:	8 - Corrosive substances
Hazard identification number (Kemler No.)	:	80
Classification code (ADR)	:	C4
Hazard labels (ADR)	:	8 - Corrosive substances

Orange plates	:	

Tunnel restriction code (ADR)	:	E
Limited quantities (ADR)		1kg
EAC	:	2X
Excepted quantities (ADR)	:	E2

Transport by sea

DOT Vessel Stowage Location	:	B - (i) The material may be stowed ‘‘on deck’’ or ‘‘under deck’’ on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers, or one passenger per each 3 m of overall vessel length; and (ii) ‘‘On deck only’’ on passenger vessels in which the number of passengers specified in paragraph (k)(2)(i) of this section is exceeded.
MFAG-No	:	154

Air transport

DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : 15 kg

DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 50 kg

Civil Aeronautics Law : Corrosive substances

14.4. Environmental hazards

Other information : No supplementary information available.

14.5. Special precautions for user

Special transport precautions : Not dangerous goods.

14.6. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. US Federal regulations

SUCCINIC ANHYDRIDE (1,4-13C2, 99%) (67519-25-9)	
SARA Section 302 Threshold Planning Quantity (TPQ)	Not subject to reporing requirements of the United States SARA Section 302.
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard
SARA Section 313 - Emission Reporting	Not subject to reporing requirements of the United States SARA Section 313.

15.2. International regulations

CANADA

SUCCINIC ANHYDRIDE (1,4-13C2, 99%) (67519-25-9)
Listed on the Canadian DSL (Domestic Substances List)

15.2.1. National regulations

No additional information available

15.3. US State regulations

SUCCINIC ANHYDRIDE (1,4-13C2, 99%)(67519-25-9)	
U.S. - California - Proposition 65 - Carcinogens List	No
U.S. - California - Proposition 65 - Developmental Toxicity	No
U.S. - California - Proposition 65 - Reproductive Toxicity - Female	No
U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No
State or local regulations	U.S. - Pennsylvania - RTK (Right to Know) List U.S. - New Jersey - Right to Know Hazardous Substance List This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

SECTION 16: Other information

Other information : This product is not radioactive. The data given for this product are those of the corresponding unlabeled compound, unless specifically indicated otherwise. Health and safety data for labeled compounds are generally not available, but are assumed to be similar or identical to the corresponding unlabeled compound.

Full text of R-, H- and EUH-phrases:

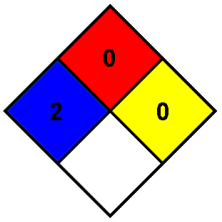
Acute Tox. 4 (Oral)	Acute toxicity (oral) Category 4
Skin Corr. 1C	Skin corrosion/irritation Category 1C
STOT SE 3	Specific target organ toxicity (single exposure) Category 3
H302	Harmful if swallowed

H314	Causes severe skin burns and eye damage
H335	May cause respiratory irritation
R22	Harmful if swallowed
R35	Causes severe burns
R37	Irritating to respiratory system
C	Corrosive
Xi	Irritant
Xn	Harmful

NFPA health hazard : 2 - Materials that, under emergency conditions, can cause temporary incapacitation or residual injury.

NFPA fire hazard : 0 - Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand.

NFPA reactivity : 0 - Material that in themselves are normally stable, even under fire conditions.



Hazard Rating

Health : 2 Moderate Hazard - Temporary or minor injury may occur

Flammability : 0 Minimal Hazard

Physical : 0 Minimal Hazard

CIL Substance SDS

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product