Cadmium acetate dihydrate

sc-210996

Material Safety Data Sheet

Hazard Alert Code Key:	EXTREME	HIGH	MODERATE	LOW

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
Cadmium acetate dihydrate

STATEMENT OF HAZARDOUS NATURE

CONSIDERED A HAZARDOUS SUBSTANCE ACCORDING TO OSHA 29 CFR 1910.1200.

NFPA

SUPPLIER
Santa Cruz Biotechnology, Inc.
2145 Delaware Avenue
Santa Cruz, California 95060
800.457.3801 or 831.457.3800

EMERGENCY
ChemWatch
Within the US & Canada: 877–715–9305
Outside the US & Canada: +800 2436 2255
(1–800-CHEMCALL) or call +613 9573 3112

SYNONYMS
Cd(CH3COO)2.2H2O, "acetic acid, cadmium salt", bis(acetoxy)cadmium, "cadmium diacetate", "C.I. 77185"

Section 2 - HAZARDS IDENTIFICATION

CHEMWATCH HAZARD RATINGS

		Min	Max
Flammability:	1		
Toxicity:	3		
Body Contact:	2		
Reactivity:	1		
Chronic:	3		

Min/Nil=0
Low=1
Moderate=2
High=3
Extreme=4

CANADIAN WHMIS SYMBOLS

EMERGENCY OVERVIEW

RISK
May cause CANCER.
Harmful by inhalation, in contact with skin and if swallowed.
Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED
■ Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual.
■ Ingestion of cadmium salts rarely results in poisoning as vomiting rejects the dose.
Ingestion may cause excessive salivation, nausea, persistent vomiting, diarrhea and abdominal pain.

EYE
■ Although the material is not thought to be an irritant, direct contact with the eye may cause transient discomfort characterized by tearing or conjunctival redness (as with windburn).
Slight abrasive damage may also result.

SKIN
■ Skin contact with the material may be harmful; systemic effects may resultfollowing absorption.
■ The material is not thought to be a skin irritant (as classified using animal models).
Abrasive damage however, may result from prolonged exposures.
■ Reactions may not occur on exposure but response may be delayed with symptoms only appearing many hours later.
■ Open cuts, abraded or irritated skin should not be exposed to this material.
■ Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects.
Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

INHALED
■ Inhalation of dusts, generated by the material, during the course of normalhandling, may be harmful.
■ The material is not thought to produce respiratory irritation (as classified using animal models).
Nevertheless inhalation of dusts, or fume, especially for prolonged periods, may produce respiratory discomfort and occasionally, distress.
■ Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur further disability if excessive concentrations of particulate are inhaled.
■ BE AWARE: Repeated minor exposures with only mild symptoms may have serious cumulative poisoning effect.
■ Cadmium is absorbed more from the respiratory tract that the intestinal tract.
Staging of symptoms include an initial, acute swelling of the lungs, followed by inflammation of the lungs after several days and chronic permanent scarring.

CHRONIC HEALTH EFFECTS
■ There is ample evidence that this material can be regarded as being able to cause cancer in humans based on experiments and other information.
Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems.
Long term exposure to high dust concentrations may cause changes in lung function i.e. pneumoconiosis; caused by particles less than 0.5 micron penetrating and remaining in the lung.
Chronic cadmium poisoning causes softening of the bones, reduced bone density, kidney stones and increased blood pressure. There may be cardiovascular disease and a yellow ring in the tooth structure.
BE AWARE: Repeated minor exposures with only mild symptoms may have serious cumulative poisoning effect.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
cadmium acetate	5743-04-4	>99

Section 4 - FIRST AID MEASURES

SWALLOWED
· IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY. · Where Medical attention is not immediately available or where the patient is more than 15 minutes from a hospital or unless instructed otherwise:

EYE
■ If this product comes in contact with the eyes: · Wash out immediately with fresh running water. · Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.

SKIN
■ If skin contact occurs: · Immediately remove all contaminated clothing, including footwear · Flush skin and hair with running water (and soap if available).

INHALED
· If fumes or combustion products are inhaled remove from contaminated area. · Lay patient down. Keep warm and rested.

NOTES TO PHYSICIAN
· High acute exposure, to cadmium, produces delayed pulmonary edema progressing to interstitial fibrosis.
· For acute inhalations, initial presentation simulates metal fume fever (fever, headache, dyspnea, pleuritic chest pain, conjunctivitis, rhinitis,

sore throat, cough) developing 4-12 hours post-exposure. Respiratory failure may ensue in 3-10 days.

Section 5 - FIRE FIGHTING MEASURES

Vapour Pressure (mmHG):	Not applicable
Upper Explosive Limit (%):	Not applicable
Specific Gravity (water=1):	2.341
Lower Explosive Limit (%):	Not applicable

EXTINGUISHING MEDIA
· Water spray or fog.
· Foam.

FIRE FIGHTING
· Alert Emergency Responders and tell them location and nature of hazard.
· Wear full body protective clothing with breathing apparatus.
When any large container (including road and rail tankers) is involved in a fire,
consider evacuation by 800 metres in all directions.

GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS
· Combustible solid which burns but propagates flame with difficulty.
· Avoid generating dust, particularly clouds of dust in a confined or unventilated space as dusts may form an explosive mixture with air, and any source of ignition, i.e. flame or spark, will cause fire or explosion. Dust clouds generated by the fine grinding of the solid are a particular hazard; accumulations of fine dust may burn rapidly and fiercely if ignited.
Combustion products include: carbon monoxide (CO), carbon dioxide (CO_2), metal oxides, other pyrolysis products typical of burning organic material.
May emit poisonous fumes.

FIRE INCOMPATIBILITY
■ Avoid contamination with oxidizing agents i.e. nitrates, oxidizing acids,chlorine bleaches, pool chlorine etc. as ignition may result.

PERSONAL PROTECTION
Glasses:
Chemical goggles.
Gloves:
Respirator:
Particulate

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS
· Clean up waste regularly and abnormal spills immediately.
· Avoid breathing dust and contact with skin and eyes.
· Wear protective clothing, gloves, safety glasses and dust respirator.
· Use dry clean up procedures and avoid generating dust.
· Vacuum up or sweep up. NOTE: Vacuum cleaner must be fitted with an exhaust micro filter (HEPA type) (consider explosion-proof machines designed to be grounded during storage and use).
· Dampen with water to prevent dusting before sweeping.
· Place in suitable containers for disposal.
MAJOR SPILLS
· Clear area of personnel and move upwind.
· Alert Emergency Responders and tell them location and nature of hazard.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING
· Avoid all personal contact, including inhalation.
· Wear protective clothing when risk of exposure occurs.
Empty containers may contain residual dust which has the potential to accumulate following settling. Such dusts may explode in the presence of an appropriate ignition source.
· Do NOT cut, drill, grind or weld such containers.
· In addition ensure such activity is not performed near full, partially empty or empty containers without appropriate workplace safety authorisation or permit.

RECOMMENDED STORAGE METHODS
■ Glass container.
· Lined metal can, Lined metal pail/drum
· Plastic pail.
For low viscosity materials
· Drums and jerricans must be of the non-removable head type.
· Where a can is to be used as an inner package, the can must have a screwed enclosure.

STORAGE REQUIREMENTS

· Store in original containers.
· Keep containers securely sealed.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

Source	Material	TWA ppm	TWA mg/m³	STEL ppm	STEL mg/m³	Peak ppm	Peak mg/m³	TWA F/CC	Notes
US OSHA Permissible Exposure Levels (PELs) - Table Z2	cadmium acetate (Cadmium dust (b) (Z37.5–1970))		0.2				0.6		
US ACGIH Threshold Limit Values (TLV)	cadmium acetate (Cadmium - Metal & compounds (as Cd))		0.01						TLV Basis: kidney damage
US ACGIH Threshold Limit Values (TLV)	cadmium acetate (Cadmium - Metal & compounds (as Cd))		0.002						TLV Basis: kidney damage
Canada - Prince Edward Island Occupational Exposure Limits	cadmium acetate (Cadmium - Metal & compounds (as Cd))		0.002						TLV Basis: kidney damage
Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)	cadmium acetate (Cadmium elemental and compounds (as Cd))		0.025						
US OSHA Permissible Exposure Levels (PELs) - Table Z2	cadmium acetate (Cadmium fume (b) (Z37.5–1970))		0.1				0.3		
US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants	cadmium acetate (Cadmium dust (as Cd))		0.2				0.6		
Canada - British Columbia Occupational Exposure Limits	cadmium acetate (Cadmium and compounds, as Cd)		0.01						A2, 1
Canada - British Columbia Occupational Exposure Limits	cadmium acetate (Cadmium and compounds, Respirable, as Cd)		0.002						A2, 1
Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits	cadmium acetate (Cadmium, and compounds, (as Cd): (respirable fraction++))		0.002		0.006				T20
US - Hawaii Air Contaminant Limits	cadmium acetate (Cadmium fume (as Cd))						0.05		
Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances	cadmium acetate (Cadmium, dust and salts (as Cd))	-	0.05	-	0.15				

US - Washington Permissible exposure limits of air contaminants	cadmium acetate (Cadmium dust and salts (as Cd) (see WAC 296-62-074 and 296-155-174))	0.005			
Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits	cadmium acetate (Cadmium, and compounds, (as Cd): (total fraction))	0.01	0.03		T20
Canada - Nova Scotia Occupational Exposure Limits	cadmium acetate (Cadmium - Metal & compounds (as Cd))	0.01			TLV Basis: kidney damage
Canada - Nova Scotia Occupational Exposure Limits	cadmium acetate (Cadmium - Metal & compounds (as Cd))	0.002			TLV Basis: kidney damage
Canada - Prince Edward Island Occupational Exposure Limits	cadmium acetate (Cadmium - Metal & compounds (as Cd))	0.01			TLV Basis: kidney damage
US - Hawaii Air Contaminant Limits	cadmium acetate (Cadmium dust (as Cd))	0.05		0.2	
Canada - Northwest Territories Occupational Exposure Limits (English)	cadmium acetate (Cadmium, dust & salts (as Cd))	0.05	0.2		
Canada - Northwest Territories Occupational Exposure Limits (English)	cadmium acetate (Cadmium oxide fume (as Cd))			0.05	
Canada - Alberta Occupational Exposure Limits	cadmium acetate (Cadmium, compounds as Cd - respirable)	0.002			
US - California Permissible Exposure Limits for Chemical Contaminants	cadmium acetate (Cadmium, soluble salts, as Cd (see also Sections 1532 & 5207))	0.005			

ENDOELTABLE

PERSONAL PROTECTION




RESPIRATOR

Particulate

Consult your EHS staff for recommendations

EYE

· Safety glasses with side shields

· Chemical goggles.

HANDS/FEET

■ Wear chemical protective gloves, eg. PVC.
Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include: such as:
· frequency and duration of contact,
· chemical resistance of glove material,
· glove thickness and
· dexterity
Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739).
· When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374) is recommended.
· When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374) is recommended.
· Contaminated gloves should be replaced.
Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.

OTHER

· Employees working with confirmed human carcinogens should be provided with, and be required to wear, clean, full body protective clothing (smocks, coveralls, or long-sleeved shirt and pants), shoe covers and gloves prior to entering the regulated area.
· Employees engaged in handling operations involving carcinogens should be provided with, and required to wear and use half-face filter-type respirators with filters for dusts, mists and fumes, or air purifying canisters or cartridges. A respirator affording higher levels of protection may be substituted.
· Emergency deluge showers and eyewash fountains, supplied with potable water, should be located near, within sight of, and on the same level with locations where direct exposure is likely.
· Prior to each exit from an area containing confirmed human carcinogens, employees should be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers must be identified with suitable labels. For maintenance and decontamination activities, authorized employees entering the area should be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood.
· Prior to removing protective garments the employee should undergo decontamination and be required to shower upon removal of the garments and hood.

ENGINEERING CONTROLS

· Employees exposed to confirmed human carcinogens should be authorized to do so by the employer, and work in a regulated area.
· Work should be undertaken in an isolated system such as a "glove-box" . Employees should wash their hands and arms upon completion of the assigned task and before engaging in other activities not associated with the isolated system.
· Within regulated areas, the carcinogen should be stored in sealed containers, or enclosed in a closed system, including piping systems, with any sample ports or openings closed while the carcinogens are contained within.
· Open-vessel systems are prohibited.
· Each operation should be provided with continuous local exhaust ventilation so that air movement is always from ordinary work areas to the operation.
· Exhaust air should not be discharged to regulated areas, non-regulated areas or the external environment unless decontaminated. Clean make-up air should be introduced in sufficient volume to maintain correct operation of the local exhaust system.
· For maintenance and decontamination activities, authorized employees entering the area should be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood. Prior to removing protective garments the employee should undergo decontamination and be required to shower upon removal of the garments and hood.
· Except for outdoor systems, regulated areas should be maintained under negative pressure (with respect to non-regulated areas).
· Local exhaust ventilation requires make-up air be supplied in equal volumes to replaced air.
· Laboratory hoods must be designed and maintained so as to draw air inward at an average linear face velocity of 150 feet/ min. with a minimum of 125 feet/ min. Design and construction of the fume hood requires that insertion of any portion of the employees body, other than hands and arms, be disallowed.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL PROPERTIES

Solid.
Mixes with water.

State	Divided solid	Molecular Weight	266.53
Melting Range (°F)	493	Viscosity	Not Applicable
Boiling Range (°F)	Not available.	Solubility in water (g/L)	Miscible
Flash Point (°F)	Not applicable	pH (1% solution)	7.1 (0.2M)
Decomposition Temp (°F)	Not Available	pH (as supplied)	Not applicable
Autoignition Temp (°F)	Not applicable	Vapour Pressure (mmHG)	Not applicable
Upper Explosive Limit (%)	Not applicable	Specific Gravity (water=1)	2.341
Lower Explosive Limit (%)	Not applicable	Relative Vapor Density (air=1)	Not applicable.
Volatile Component (%vol)	Not applicable.	Evaporation Rate	Not applicable

APPEARANCE

Crystalline Powder, soluble in water. Slight acetic acid odour. Soluble in alcohol. Pure reagent form is dihydrate CAS RN [5743-04-4]. Cadmium has a Bioconcentration Factor of 3000.

Section 10 - CHEMICAL STABILITY

CONDITIONS CONTRIBUTING TO INSTABILITY

· Presence of incompatible materials.
· Product is considered stable.

STORAGE INCOMPATIBILITY

■ Avoid strong acids.
Avoid reaction with oxidizing agents.

For incompatible materials - refer to Section 7 - Handling and Storage.

Section 11 - TOXICOLOGICAL INFORMATION

cadmium acetate

TOXICITY AND IRRITATION

CADMIUM ACETATE:

■ unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.
■ No significant acute toxicological data identified in literature search.
WARNING: This substance has been classified by the IARC as Group 2A: Probably Carcinogenic to Humans.
Tenth Annual Report on Carcinogens: Substance anticipated to be Carcinogen
[National Toxicology Program: U.S. Dep. of Health & Human Services 2002].

CARCINOGEN

	US - Rhode Island Hazardous Substance List	IARC	C
CADMIUM ACETATE	US Environmental Defense Scorecard Recognized Carcinogens	Reference(s)	P65-MC
CADMIUM COMPOUNDS	US Environmental Defense Scorecard Recognized Carcinogens	Reference(s)	P65
CADMIUM ACETATE	US Environmental Defense Scorecard Suspected Carcinogens	Reference(s)	P65-MC
CADMIUM COMPOUNDS	US Environmental Defense Scorecard Suspected Carcinogens	Reference(s)	P65
Cadmium (and compounds)	US Air Toxics Hot Spots TSD for Describing Available Cancer Potency Factors	IARC Class	1
VPVB_(VERY~	US - Maine Chemicals of High Concern List	Carcinogen	CA Prop 65; NTP 11th ROC

Section 12 - ECOLOGICAL INFORMATION

Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
This material and its container must be disposed of as hazardous waste.
Avoid release to the environment.
Refer to special instructions/ safety data sheets.

Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
cadmium acetate	LOW		LOW	HIGH

Section 13 - DISPOSAL CONSIDERATIONS

US EPA Waste Number & Descriptions

A. General Product Information
Toxicity characteristic: use EPA hazardous waste number D006 (waste code E) if this substance, in a solid waste, produces an extract containing greater than 1 mg/L of cadmium.

Disposal Instructions

All waste must be handled in accordance with local, state and federal regulations.
¦ Puncture containers to prevent re-use and bury at an authorized landfill.
Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.
A Hierarchy of Controls seems to be common - the user should investigate:
· Reduction

· Reuse
· Recycling
· Disposal (if all else fails)
This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate.
DO NOT allow wash water from cleaning equipment to enter drains. Collect all wash water for treatment before disposal.
· Recycle wherever possible.
· Consult manufacturer for recycling options or consult Waste Management Authority for disposal if no suitable treatment or disposal facility can be identified.

Section 14 - TRANSPORTATION INFORMATION

DOT:
Symbols: None Hazard class or Division: 6.1
Identification Numbers: UN2570 PG: III
Label Codes: 6.1 Special provisions: IB8, IP3,
T1, TP33
Packaging: Exceptions: 153 Packaging: Non- bulk: 213
Packaging: Exceptions: 153 Quantity limitations: 100 kg
Passenger aircraft/rail:
Quantity Limitations: Cargo 200 kg Vessel stowage: Location: A
aircraft only:
Vessel stowage: Other: None S.M.P.: Severe
Hazardous materials descriptions and proper shipping names:
Cadmium compounds

Air Transport IATA:

ICAO/IATA Class: 6.1 ICAO/IATA Subrisk: None
UN/ID Number: 2570 Packing Group: III
Special provisions: A3
Cargo Only
Packing Instructions: 200 kg Maximum Qty/Pack: 100 kg
Passenger and Cargo Passenger and Cargo
Packing Instructions: 677 Maximum Qty/Pack: 670
Passenger and Cargo Limited Quantity Passenger and Cargo Limited Quantity
Packing Instructions: 10 kg Maximum Qty/Pack: Y645
Shipping Name: CADMIUM COMPOUND * 2570(CONTAINS CADMIUM
ACETATE)

Maritime Transport IMDG:

IMDG Class: 6.1 IMDG Subrisk: None
UN Number: 2570 Packing Group: III
EMS Number: F-A , S-A Special provisions: 223
Limited Quantities: 5 kg Marine Pollutant: Yes
Shipping Name: CADMIUM COMPOUND
(contains cadmium acetate)

Section 15 - REGULATORY INFORMATION

cadmium acetate (CAS: 543-90-8,5743-04-4,89759-80-8) is found on the following regulatory lists;
"Canada Domestic Substances List (DSL)","Canada Ingredient Disclosure List (SOR/88-64)","Canada Toxicological Index Service - Workplace Hazardous Materials Information System - WHMIS (English)","US - California Occupational Safety and Health Regulations (CAL/OSHA) - Hazardous Substances List","US - Massachusetts Oil & Hazardous Material List","US - New Jersey Right to Know Hazardous Substances","US - Pennsylvania - Hazardous Substance List","US CWA (Clean Water Act) - List of Hazardous Substances","US CWA (Clean Water Act) - Reportable Quantities of Designated Hazardous Substances","US Department of Transportation (DOT) List of Hazardous Substances and Reportable Quantities - Hazardous Substances Other Than Radionuclides","US DOE Temporary Emergency Exposure Limits (TEELs)","US List of Lists - Consolidated List of Chemicals Subject to EPCRA, CERCLA and Section 112(r) of the Clean Air Act","US Toxic Substances Control Act (TSCA) - Inventory"

Section 16 - OTHER INFORMATION

Ingredients with multiple CAS Nos
Ingredient Name CAS cadmium acetate 543-90-8, 5743-04-4, 89759-80-8

Reasonable care has been taken in the preparation of this information, but the author makes no warranty of merchantability or any other warranty, expressed or implied, with respect to this information. The author makes no representations and assumes no liability for any direct, incidental or consequential damages resulting from its use. For additional technical information please call our toxicology department on +800 CHEMCALL.

■ Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.
A list of reference resources used to assist the committee may be found at:
www.chemwatch.net/references.

■ The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

Issue Date: Dec-22-2009

Print Date:Mar-18-2011