

# Lead(II) acetylacetonate

sc-228408



The Power is Question

## Material Safety Data Sheet

Hazard Alert Code  
Key:

EXTREME

HIGH

MODERATE

LOW

### Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

#### PRODUCT NAME

Lead(II) acetylacetonate

#### 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

C10-H14-O4-Pb, "lead, bis(2, 4-pentanedionato-O, O' )-, (T-4)", "lead, bis(2, 4-pentanedionato)-", bisacetylacetonatolead, "bis(2, 4-pentanedionato)lead", "(T-4)-bis(2, 4-pentanedionato-O, O' )lead"

### Section 2 - HAZARDS IDENTIFICATION

#### CHEMWATCH HAZARD RATINGS

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

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



## CANADIAN WHMIS SYMBOLS



### EMERGENCY OVERVIEW

#### RISK

Danger of cumulative effects.

May cause harm to the unborn child.

Possible risk of impaired fertility.

Harmful danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.

Harmful by inhalation 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 2,4-pentanedione (acetylacetone) may produce irritation of the mouth, oesophagus and stomach producing abdominal discomfort, nausea, vomiting diarrhoea, dizziness, malaise and fainting.

■ At sufficiently high doses the material may be neurotoxic(i.

e.

##### EYE

■ There is some evidence to suggest that this material can cause eye irritation and damage in some persons.

■ Exposure to 2,4-pentadione may produce excessive redness of the eyes and swelling of the conjunctivae; blinking and tearing may occur.

Corneal damage is unlikely.

##### SKIN

■ Skin contact is not thought to produce harmful health effects (as classified using animal models).

Systemic harm, however, has been identified following exposure of animals by at least one other route and the material may still produce health damage following entry through wounds, lesions or abrasions.

■ 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.

■ 2,4-Pentadione may produce contact dermatitis or urticaria.

Prolonged contact with 2,4-pentanedione may produce severe discomfort or pain, redness and swelling and corrosion, ulceration and development of fissures.

##### INHALED

■ Inhalation of dusts, generated by the material, during the course of normal handling, 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.

■ At sufficiently high doses the material may be neurotoxic(i.

e.

■ High doses of 2,4-pentanedione produced dyspnae, severe, central nervous system depression and death in experimental animals.

Similar effects were produced at lower repeated doses although some animals survive and develop a central nervous system disorder characterised by irreversible cerebellar syndrome.

■ Lead fume is toxic and acts as a cumulative poison.

Regular blood testing should be considered for workers who are regularly exposed.

## CHRONIC HEALTH EFFECTS

■ Harmful danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.

Harmful danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.

This material can cause serious damage if one is exposed to it for long periods. It can be assumed that it contains a substance which can produce severe defects.

Ample evidence exists that developmental disorders are directly caused by human exposure to the material.

Ample evidence from experiments exists that there is a suspicion this material directly reduces fertility.

There is limited evidence that, skin contact with this product is more likely to cause a sensitization reaction in some persons compared to the general population.

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.

Exposure to the material for prolonged periods may cause physical defects in the developing embryo (teratogenesis).

Lead, in large amounts, can affect the blood, nervous system, heart, glands, immune system and digestive system. Anemia may occur.

Lead can cross the placenta, and cause miscarriage, stillbirths and birth defects. Exposure before birth can cause mental retardation, behavioral disorders and infant death.

Repeated overexposure to 200 ppm 2,4-pentanedione vapor may result in inflammation of the nasal mucosa. Higher concentrations may produce central nervous system effects, and immune system and bone marrow deficits.

In use the substance may decompose to produce 2,4-pentanedione a powerful neurotoxin.

## Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
lead(II) acetylacetonate	15282-88-9	>98.5
NOTE In use may evolve		
<a href="#">2,4-pentanedione</a>	123-54-6	

## 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

- 
- Gastric acids solubilize lead and its salts and lead absorption occurs in the small bowel.
- Particles of less than 1um diameter are substantially absorbed by the alveoli following inhalation.

## Section 5 - FIRE FIGHTING MEASURES

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

### EXTINGUISHING MEDIA

- Water spray or fog.
- Foam.

### FIRE FIGHTING

- Alert Emergency Responders and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves.

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<sub>2</sub>), 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.

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## Section 6 - ACCIDENTAL RELEASE MEASURES

### MINOR SPILLS

- Remove all ignition sources.
- Clean up all spills immediately.

- Avoid contact with skin and eyes.
- Control personal contact by using protective equipment.
- Use dry clean up procedures and avoid generating dust.
- Place in a suitable, labelled container for waste 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/m <sup>3</sup>	STEL ppm	STEL mg/m <sup>3</sup>	Peak ppm	Peak mg/m <sup>3</sup>	TWA F/CC	Notes
US - Idaho - Acceptable Maximum Peak Concentrations	lead(II) acetylacetonate (Lead and its inorganic compounds (Z37.11-1969))		0.2						
Canada - Ontario Occupational Exposure Limits	lead(II) acetylacetonate (Elemental lead, inorganic and organic compounds of lead, as Pb except tetraethyl lead / Plomb élémentaire, composés inorganiques et organiques du plomb, en Pb, sauf le plomb tétraéthyle)		0.05						Skin (organic compounds) / Peau (composés organiques)
Canada - British Columbia Occupational Exposure Limits	2,4-pentanedione (Diesel fuel, as total hydrocarbons, Inhalable)		100 (V)						Skin

Canada - British Columbia Occupational Exposure Limits	2,4-pentanedione (Kerosene /Jet fuels, as total hydrocarbon vapour, Revised 2003)	200 (P)			Skin
Canada - Alberta Occupational Exposure Limits	2,4-pentanedione (Kerosene/Jet fuels, as total hydrocarbon vapour)	200			
Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits	2,4-pentanedione (Diesel fuel as total hydrocarbons, (vapour))	100	150		Skin
Canada - Alberta Occupational Exposure Limits	2,4-pentanedione (Diesel fuel, as total hydrocarbons)	100			

**PERSONAL PROTECTION**



**RESPIRATOR**

•Type A-P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 1432000 & 1492001, ANSI Z88 or national equivalent)

**EYE**

- Safety glasses with side shields.
- Chemical goggles.

**HANDS/FEET**

Wear chemical protective gloves, eg. PVC.

NOTE The material may produce skin sensitization in predisposed individuals. Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact.

Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include

- 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, AS/NZS 2161.1 or national equivalent).

- 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, AS/NZS 2161.10.1 or national equivalent) 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, AS/NZS 2161.10.1 or national equivalent) 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**

- Overalls.
- Eyewash unit.

## ENGINEERING CONTROLS

- Local exhaust ventilation is required where solids are handled as powders or crystals; even when particulates are relatively large, a certain proportion will be powdered by mutual friction.
- Exhaust ventilation should be designed to prevent accumulation and recirculation of particulates in the workplace.

## Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

### PHYSICAL PROPERTIES

Solid.

Mixes with water.

State	Divided solid	Molecular Weight	405.42
Melting Range (°F)	Not available	Viscosity	Not Applicable
Boiling Range (°F)	Not available	Solubility in water (g/L)	Miscible
Flash Point (°F)	Not available	pH (1% solution)	Not available
Decomposition Temp (°F)	Not available	pH (as supplied)	Not applicable
Autoignition Temp (°F)	Not available	Vapour Pressure (mmHG)	Not available
Upper Explosive Limit (%)	Not available	Specific Gravity (water=1)	Not available
Lower Explosive Limit (%)	Not available	Relative Vapor Density (air=1)	>1
Volatile Component (%vol)	Not available	Evaporation Rate	Not available

### APPEARANCE

Powder; mixes with water.

log Kow 1.9-2.25

Material	Value
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## Section 10 - CHEMICAL STABILITY

### CONDITIONS CONTRIBUTING TO INSTABILITY

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

### STORAGE INCOMPATIBILITY

‡ Avoid reaction with oxidizing agents.

For 2,4-pentanedione

- Segregate from halogens.
- Store away from steel, nickel, zinc, galvanized iron, tinned iron, copper and copper alloys.

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

## Section 11 - TOXICOLOGICAL INFORMATION

lead(II) acetylacetonate

### TOXICITY AND IRRITATION

unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.

LEAD(II) ACETYLACETONATE

No significant acute toxicological data identified in literature search.

2,4-PENTANEDIONE

TOXICITY	IRRITATION
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Oral (rat) LD50 970 mg/kg *	Skin (rabbit) 10 mg/24h
Oral (rat) LD50 55 mg/kg	Skin (rabbit) 0.476 - SEVERE
Dermal (rabbit) LD50 810 mg/kg	Skin (rabbit) 488 mg - Mild

\*[Union Carbide]

The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

### CARCINOGEN

Lead compounds, organic (NB Organic lead compounds are metabolized at least in part, to ionic lead both in humans and animals. To the extent that ionic lead, generated from organic lead, is present in the body, it will be expected to exert the toxicities associated with inorganic lead.)	International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs	Group	3
LEAD COMPOUNDS	US Environmental Defense Scorecard Recognized Carcinogens	Reference(s)	P65
ORGANIC LEAD COMPOUNDS	US Environmental Defense Scorecard Recognized Carcinogens	Reference(s)	P65-MC
LEAD COMPOUNDS	US Environmental Defense Scorecard Suspected Carcinogens	Reference(s)	P65
ORGANIC LEAD COMPOUNDS	US Environmental Defense Scorecard Suspected Carcinogens	Reference(s)	P65-MC
Lead and lead compounds (inhalation)	US Air Toxics Hot Spots TSD for Describing Available Cancer Potency Factors	IARC Class	2B
Lead and lead compounds (oral)	US Air Toxics Hot Spots TSD for Describing Available Cancer Potency Factors	IARC Class	
PBIT_(PERS~	US - Maine Chemicals of High Concern List	Carcinogen	CA Prop 65; IARC; NTP 11th ROC

### SKIN

2,4-pentanedione	Canada - British Columbia Occupational Exposure Limits - Skin	Notation	Skin
2,4-pentanedione	Canada - Alberta Occupational Exposure Limits - Skin	Substance Interaction	1

## 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.

## Section 13 - DISPOSAL CONSIDERATIONS

### US EPA Waste Number & Descriptions

A. General Product Information

Toxicity characteristic: use EPA hazardous waste number D008 (waste code E) if this substance, in a solid waste, produces an extract containing greater than 5 mg/L of lead.

### 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:	UN2291	PG:	III
Label Codes:	6.1	Special provisions:	138, IB8, IP3, T1, TP33
Packaging: Exceptions:	153	Packaging: Non-bulk:	213
Packaging: Exceptions:	153	Quantity limitations: Passenger aircraft/rail:	100 kg
Quantity Limitations: Cargo aircraft only:	200 kg	Vessel stowage: Location:	A
Vessel stowage: Other:	None	S.M.P.:	YES

Hazardous materials descriptions and proper shipping names:

Lead compounds, soluble, n.o.s.

### Air Transport IATA:

UN/ID Number:	2291	Packing Group:	III
Special provisions:	A92		
Cargo Only			
Packing Instructions:	677	Maximum Qty/Pack:	200 kg
Passenger and Cargo		Passenger and Cargo	
Packing Instructions:	Y645	Maximum Qty/Pack:	100 kg
Passenger and Cargo Limited Quantity		Passenger and Cargo Limited Quantity	
Packing Instructions:	670	Maximum Qty/Pack:	10 kg

Shipping Name: LEAD COMPOUND, SOLUBLE, N.O.S. \*(CONTAINS LEAD(II) ACETYLACETONATE)

**Maritime Transport IMDG:**

IMDG Class:	6.1	IMDG Subrisk:	P
UN Number:	2291	Packing Group:	III
EMS Number:	F-A,S-A	Special provisions:	199 274
Limited Quantities:	5 kg	Marine Pollutant:	Yes

Shipping Name: LEAD COMPOUND, SOLUBLE, N.O.S.(contains lead(II) acetylacetonate)

### Section 15 - REGULATORY INFORMATION

**lead(II) acetylacetonate (CAS: 15282-88-9) is found on the following regulatory lists;**

"Canada - Ontario Occupational Exposure Limits", "Canada National Pollutant Release Inventory (NPRI)", "US - California Air Toxics ""Hot Spots"" List (Assembly Bill 2588) Substances for which emissions must be quantified", "US - California Environmental Health Standards for the Management of Hazardous Waste - List of Inorganic Persistent and Bioaccumulative Toxic Substances and Their STLC & TTLC Values", "US - California Occupational Safety and Health Regulations (CAL/OSHA) - Hazardous Substances List", "US - California Proposition 65 - No Significant Risk Levels (NSRLs) for Carcinogens", "US - Idaho - Acceptable Maximum Peak Concentrations", "US - Massachusetts Oil & Hazardous Material List", "US - Vermont Hazardous Constituents", "US - Washington Class A toxic air pollutants: Known and Probable Carcinogens", "US - Washington Dangerous waste constituents list", "US Clean Air Act - Hazardous Air Pollutants", "US CWA (Clean Water Act) - Priority Pollutants", "US CWA (Clean Water Act) - Toxic Pollutants", "US EPA Toxic Chemical Release Inventory Persistent Bioaccumulative Toxic Chemical (PBT) List", "US National Toxicology Program (NTP) 11th Report Part B. Reasonably Anticipated to be a Human Carcinogen", "US RCRA (Resource Conservation & Recovery Act) - Appendix IX to Part 264 Ground-Water Monitoring List 1", "US RCRA (Resource Conservation & Recovery Act) - Hazardous Constituents - Appendix VIII to 40 CFR 261", "US RCRA (Resource Conservation & Recovery Act) - List of Hazardous Inorganic and Organic Constituents 1", "US TSCA Section 4 (e) - ITC Priority Testing List"

**Regulations for ingredients**

**2,4-pentanedione (CAS: 123-54-6) is found on the following regulatory lists;**

"Canada Domestic Substances List (DSL)", "Canada Ingredient Disclosure List (SOR/88-64)", "International Council of Chemical Associations (ICCA) - High Production Volume List", "US - Massachusetts Oil & Hazardous Material List", "US - New Jersey Right to Know Hazardous Substances", "US ACGIH Threshold Limit Values (TLV) - Notice of Intended Changes", "US DOE Temporary Emergency Exposure Limits (TEELs)", "US EPA High Production Volume Program Chemical List", "US FDA Indirect Food Additives: Adhesives and Components of Coatings - Substances for Use Only as Components of Adhesives - Adhesives", "US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory", "US TSCA Section 12(b) - List of Chemical Substances Subject to Export Notification Requirements", "US TSCA Section 5(a)(2) - Significant New Use Rules (SNURs)", "US TSCA Section 8 (a) - Preliminary Assessment Information Rules (PAIR) - Reporting List", "US TSCA Section 8 (d) - Health and Safety Data Reporting"

### Section 16 - OTHER INFORMATION

**LIMITED EVIDENCE**

- May produce discomfort of the eyes\*.
- Possible skin sensitiser\*.

\* (limited evidence).

*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](http://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.

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