Hexane-d14

sc-228295

Material Safety Data Sheet

Hazard Alert Code Key:	EXTREME	HIGH	MODERATE	LOW

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
Hexane-d14

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
C6-D14, perdeuterohexane

Section 2 - HAZARDS IDENTIFICATION

CHEMWATCH HAZARD RATINGS

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

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

CANADIAN WHMIS SYMBOLS

EMERGENCY OVERVIEW

RISK

HARMFUL - May cause lung damage if swallowed.
Harmful: danger of serious damage to health by prolonged exposure through inhalation.
Highly flammable.

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

■ Swallowing of the liquid may cause aspiration into the lungs with the risk of chemical pneumonitis; serious consequences may result. (ICSC13733).
■ The material has NOT been classified as "harmful by ingestion".
This is because of the lack of corroborating animal or human evidence.
■ Chronic inhalation or skin exposure to n-hexane may cause damage to nerve ends in extremities, e.
g.

EYE

■ Limited evidence or practical experience suggests, that the material may cause eye irritation in a substantial number of individuals.
Prolonged eye contact may cause inflammation characterized by a temporary redness of the conjunctiva (similar to windburn).

SKIN

■ This material can cause inflammation of the skin oncontact in some persons.
■ The material may accentuate any pre-existing dermatitis condition.
■ Skin contact with the material may damage the health of the individual; systemic effects may result following absorption.
■ Open cuts, abraded or irritated skin should not be exposed to this material.
■ The liquid may be miscible with fats or oils and may degrease the skin, producing a skin reaction described as non-allergic contact dermatitis.
The material is unlikely to produce an irritant dermatitis as described in EC Directives .
■ 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 vapours may cause drowsiness and dizziness.
This may be accompanied by narcosis, reduced alertness, loss of reflexes, lack of coordination and vertigo.
■ Inhalation of vapors or aerosols (mists, fumes), generated by the material during the course of normal handling, may be damaging to the health of the individual.
■ There is some evidence to suggest that the material can cause respiratory irritation in some persons.
The body's response to such irritation can cause further lung damage.
■ Inhalation of high concentrations of gas/vapor causes lung irritation with coughing and nausea, central nervous depression with headache and dizziness, slowing of reflexes, fatigue and inco-ordination.

CHRONIC HEALTH EFFECTS

■ Harmful: danger of serious damage to health by prolonged exposure through inhalation.
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 from experiments exists that there is a suspicionthis material directly reduces fertility.
Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems.
Chronic inhalation or skin exposure to n-hexane may cause damage to nerve ends in extremities, e.g. finger, toes with loss of sensation.
gamma-Diketones are generally neurotoxic. They occur either as products of commerce (e.g. 2,5-hexanedione, 2,5-heptanedione, 3,6-octanedione) or as metabolites (of, for example, n-hexane and 2-hexanone). The neurotoxic syndrome is best described as a sensorimotor or motor polyneuropathy. The initial symptoms are symmetrical sensory numbness and paraesthesias of the distal portions of the extremities. Sensory loss usually involves all modalities of the feet or hands. Motor weakness is typically observed in the muscles of the toes and fingers but may also involve the muscles of arms, thighs and forearms. Onset of symptoms may be delayed for several months to a year after the initial exposure. Pathologically the syndrome is characterised by a swelling of the axon, demyelination and nerve fibre degradation resembling a dying-back neuropathy.
Central and autonomic nervous systems are unaffected.
The clinical course of the disease following removal from exposure is complete recovery, but severe cases may retain sensorimotor deficits.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
n-hexane-D14	21666-38-6	>98
contains		
n-hexane	110-54-3	

Section 4 - FIRST AID MEASURES

SWALLOWED
· If spontaneous vomiting appears imminent or occurs, hold patient's head down, lower than their hips to help avoid possible aspiration of vomitus. · If swallowed do NOT induce vomiting. · If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. · Avoid giving milk or oils. · Avoid giving alcohol.

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
■ Any material aspirated during vomiting may produce lung injury. Therefore emesis should not be induced mechanically or pharmacologically.
Following acute or short term repeated exposures to n-hexane:
· Large quantities of n-hexane are expired by the lungs after vapor exposure (50-60%). Humans exposed to 100 ppm demonstrate an n-hexane biological half life of 2 hours.
· Initial attention should be directed towards evaluation and support of respiration. Cardiac dysrhythmias are a potential complication.

Section 5 - FIRE FIGHTING MEASURES

Vapor Pressure (mmHg):	99.983
Upper Explosive Limit (%):	7.5
Specific Gravity (water=1):	0.6603 @ 20 C
Lower Explosive Limit (%):	1.2

EXTINGUISHING MEDIA
· Foam.
· Dry chemical powder.

FIRE FIGHTING
· Alert Emergency Responders and tell them location and nature of hazard.
· May be violently or explosively reactive.
When any large container (including road and rail tankers) is involved in a fire,
consider evacuation by 500 metres in all directions.

GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS
· Liquid and vapor are highly flammable.
· Severe fire hazard when exposed to heat, flame and/or oxidizers.
Combustion products include: carbon dioxide (CO_2), other pyrolysis products typical of burning organic material.
May emit clouds of acrid smoke.

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

PERSONAL PROTECTION
Glasses:
Safety Glasses.
Chemical goggles.
Gloves:
Respirator:
Type AX Filter of sufficient capacity

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS

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

· Containers, even those that have been emptied, may contain explosive vapours.
· Do NOT cut, drill, grind, weld or perform similar operations on or near containers.
· DO NOT allow clothing wet with material to stay in contact with skin.
· Avoid all personal contact, including inhalation.
· Wear protective clothing when risk of exposure occurs.
Avoid concurrent exposure to materials containing Methyl Ethyl Ketone MEK

RECOMMENDED STORAGE METHODS

■ Glass container.
Packing as supplied by manufacturer. Plastic containers may only be used if approved for flammable liquid.
· For low viscosity materials (i): Drums and jerricans must be of the non-removable head type. (ii): Where a can is to be used as an inner package, the can must have a screwed enclosure.
· For materials with a viscosity of at least 2680 cSt. (23 deg. C).

STORAGE REQUIREMENTS

· Store in original containers in approved flame-proof area.
· No smoking, naked lights, heat or ignition sources.

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
Canada - British Columbia Occupational Exposure Limits	n-hexane (n-Hexane)	20							Skin
US - Minnesota Permissible Exposure Limits (PELs)	n-hexane (n-Hexane)	50	180						
US ATSDR Minimal Risk Levels for Hazardous Substances (MRLs)	n-hexane (HEXANE, N-)	0.6							
US ACGIH Threshold Limit Values (TLV)	n-hexane (n-Hexane)	50							TLV Basis: central nervous system impairment; peripheral neuropathy; eye irritation
US NIOSH Recommended Exposure Limits (RELs)	n-hexane (n-Hexane)	50	180						
Canada - Alberta Occupational Exposure Limits	n-hexane (n-Hexane)	50	176						

US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants	n-hexane (n-Hexane)	50	180				
US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants	n-hexane (n-Hexane.)	500	1800				
US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants	n-hexane (n-Hexane)	50	180				
US - California Permissible Exposure Limits for Chemical Contaminants	n-hexane (n-Hexane)	50	180				
US - Idaho - Limits for Air Contaminants	n-hexane (n-Hexane)	500	1800				
US OSHA Permissible Exposure Levels (PELs) - Table Z1	n-hexane (n-Hexane)	500	1800				
US - Hawaii Air Contaminant Limits	n-hexane (n-Hexane)	50	180				
US - Alaska Limits for Air Contaminants	n-hexane (n-Hexane)	50	180				
US - Michigan Exposure Limits for Air Contaminants	n-hexane (n-Hexane)	50	180				
Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances	n-hexane (Hexane (n-hexane))	100	360	125	450		
US - Washington Permissible exposure limits of air contaminants	n-hexane (Hexane - n-hexane)	50		75			
Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits	n-hexane (Hexane (n-Hexane))	50		62.5			Skin
Canada - Prince Edward Island Occupational Exposure Limits	n-hexane (n-Hexane)	50					TLV Basis: central nervous system impairment; peripheral neuropathy;

						eye irritation
US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants	n-hexane (n-Hexane)	500	1800			
Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)	n-hexane (n-Hexane)	50	176			
US - Oregon Permissible Exposure Limits (Z-1)	n-hexane (Hexane (n-hexane))	500	1,800			
Canada - Northwest Territories Occupational Exposure Limits (English)	n-hexane (Hexane (n-Hexane))	100	352	125	440	
Canada - Nova Scotia Occupational Exposure Limits	n-hexane (n-Hexane)	50				TLV Basis: central nervous system impairment; peripheral neuropathy; eye irritation

ENDOELTABLE
The following materials had no OELs on our records

• n-hexane-D14: CAS:21666-38-6

PERSONAL PROTECTION




RESPIRATOR

• type ax filter of sufficient capacity.

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.
· Polyethylene gloves.

OTHER
· Overalls.
· PVC Apron.
· Some plastic personal protective equipment (PPE) (e.g. gloves, aprons, overshoes) are not recommended as they may produce static electricity.
· For large scale or continuous use wear tight-weave non-static clothing (no metallic fasteners, cuffs or pockets), non sparking safety footwear.

ENGINEERING CONTROLS
■ For flammable liquids and flammable gases, local exhaust ventilation or a process enclosure ventilation system may be required. Ventilation equipment should be explosion-resistant.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL PROPERTIES
Liquid.
Does not mix with water.
Floats on water.

State	Liquid	Molecular Weight	100.17
Melting Range (°F)	-140	Viscosity	Not Available
Boiling Range (°F)	156	Solubility in water (g/L)	Immiscible
Flash Point (°F)	-9	pH (1% solution)	Not applicable
Decomposition Temp (°F)	Not Available	pH (as supplied)	Not applicable
Autoignition Temp (°F)	437	Vapor Pressure (mmHg)	99.983
Upper Explosive Limit (%)	7.5	Specific Gravity (water=1)	0.6603 @ 20 C
Lower Explosive Limit (%)	1.2	Relative Vapor Density (air=1)	2.97
Volatile Component (%vol)	100	Evaporation Rate	Not available

APPEARANCE
Clear highly flammable liquid with typical paraffinic odour; floats on water. Mixes with most other organic solvents, chloroform, ether, alcohol. A very volatile liquid, it readily forms explosive vapour /air mixes.

log Kow 3.17-3.94

Material	Value

Section 10 - CHEMICAL STABILITY

CONDITIONS CONTRIBUTING TO INSTABILITY
· Presence of heat source and ignition source.
· Presence of incompatible materials.
· Product is considered stable.

STORAGE INCOMPATIBILITY
■ Avoid reaction with oxidizing agents.

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

Section 11 - TOXICOLOGICAL INFORMATION

n-hexane-D14

TOXICITY AND IRRITATION
■ unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.
■ The material may be irritating to the eye, with prolonged contact causing inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

TOXICITY	IRRITATION
N-HEXANE:	
Oral (rat) LD50: 28710 mg/kg	Eye(rabbit): 10 mg -

	Mild
Inhalation (human) TCLo: 190 ppm/8W	
Inhalation (rat) LD50: 48000 ppm/4h	

CARCINOGEN

n-hexane	US - Rhode Island Hazardous Substance List	IARC

SKIN

n-hexane	Canada - Alberta Occupational Exposure Limits - Skin	Substance Interaction	1

Section 12 - ECOLOGICAL INFORMATION

This material and its container must be disposed of as hazardous waste.

Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
n-hexane-D14	LOW	No Data Available	LOW	MED
n-hexane	HIGH	No Data Available	MED	MED

Section 13 - DISPOSAL CONSIDERATIONS

US EPA Waste Number & Descriptions

A. General Product Information
Ignitability characteristic: use EPA hazardous waste number D001 (waste code I)

Disposal Instructions

All waste must be handled in accordance with local, state and federal regulations.
¦ 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. If it has been contaminated, it may be possible to reclaim the product by filtration, distillation or some other means. 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: 3
Identification Numbers: UN1208 PG: II
Label Codes: 3 Special provisions: IB2, T4,
TP1
Packaging: Exceptions: 150 Packaging: Non- bulk: 202
Packaging: Exceptions: 150 Quantity limitations: 5 L
Passenger aircraft/rail:
Quantity Limitations: Cargo 60 L Vessel stowage: Location: E
aircraft only:
Vessel stowage: Other: None
Hazardous materials descriptions and proper shipping names:
Hexanes

Air Transport IATA:
ICAO/IATA Class: 3 ICAO/IATA Subrisk: None
UN/ID Number: 1208 Packing Group: II
Special provisions: None
Cargo Only
Packing Instructions: 60 L Maximum Qty/Pack: 364
Passenger and Cargo Passenger and Cargo
Packing Instructions: 5 L Maximum Qty/Pack: 353
Passenger and Cargo Limited Quantity Passenger and Cargo Limited Quantity
Packing Instructions: 1 L Maximum Qty/Pack: Y341
Shipping Name: HEXANES

Maritime Transport IMDG:
IMDG Class: 3 IMDG Subrisk: None
UN Number: 1208 Packing Group: II
EMS Number: F-E , S-D Special provisions: None
Limited Quantities: 1 L
Shipping Name: HEXANES

Section 15 - REGULATORY INFORMATION

n-hexane-D14 (CAS: 21666-38-6) is found on the following regulatory lists;
"US Department of Transportation (DOT), Hazardous Material Table"

Regulations for ingredients

n-hexane (CAS: 110-54-3) is found on the following regulatory lists;
"Canada - Alberta Occupational Exposure Limits","Canada - British Columbia Occupational Exposure Limits","Canada - Northwest Territories Occupational Exposure Limits (English)","Canada - Nova Scotia Occupational Exposure Limits","Canada - Prince Edward Island Occupational Exposure Limits","Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)","Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits","Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances","Canada Ingredient Disclosure List (SOR/88-64)","Canada National Pollutant Release Inventory (NPRI)","Canada Toxicological Index Service - Workplace Hazardous Materials Information System - WHMIS (English)","IMO MARPOL 73/78 (Annex II) - List of Other Liquid Substances","OECD Representative List of High Production Volume (HPV) Chemicals","US - Alaska Limits for Air Contaminants","US - California OEHHA/ARB - Chronic Reference Exposure Levels and Target Organs (CRELs)","US - California Permissible Exposure Limits for Chemical Contaminants","US - Connecticut Hazardous Air Pollutants","US - Hawaii Air Contaminant Limits","US - Idaho - Limits for Air Contaminants","US - Massachusetts Oil & Hazardous Material List","US - Michigan Exposure Limits for Air Contaminants","US - Minnesota Hazardous Substance List","US - Minnesota Permissible Exposure Limits (PELs)","US - New Jersey Right to Know Hazardous Substances","US - Oregon Permissible Exposure Limits (Z-1)","US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants","US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants","US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants","US - Washington Permissible exposure limits of air contaminants","US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants","US ACGIH Threshold Limit Values (TLV)","US ATSDR Minimal Risk Levels for Hazardous Substances (MRLs)","US DOE Temporary Emergency Exposure Limits (TEELs)","US EPA Master Testing List - Index I Chemicals Listed","US EPA Master Testing List - Index II Chemicals Removed","US EPCRA Section 313 Chemical List","US List of Lists - Consolidated List of Chemicals Subject to EPCRA, CERCLA and Section 112(r) of the Clean Air Act","US NFPA 30B Manufacture and Storage of Aerosol Products - Chemical Heat of Combustion","US NIOSH Recommended Exposure Limits (RELs)","US OSHA Permissible Exposure Levels (PELs) - Table Z1","US -Texas Air Monitoring Comparison Values for Evaluating Carbonyls","US Toxic Substances Control Act (TSCA) - Inventory"

Section 16 - OTHER INFORMATION

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.

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