

# Beryllium

sc-252431



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

Beryllium

### 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

Be, beryllium-9, "beryllium metal", glucinium, glucinum

## Section 2 - HAZARDS IDENTIFICATION

### CHEMWATCH HAZARD RATINGS

	Min	Max
Flammability:	3	
Toxicity:	4	
Body Contact:	2	
Reactivity:	2	
Chronic:	4	

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



### CANADIAN WHMIS SYMBOLS



### EMERGENCY OVERVIEW

## RISK

Toxic if swallowed.

Very toxic by inhalation.

Irritating to eyes.

May cause CANCER by inhalation.

May cause SENSITISATION by skin contact.

Toxic: danger of serious damage to health by prolonged exposure through inhalation.

Flammable.

## POTENTIAL HEALTH EFFECTS

### ACUTE HEALTH EFFECTS

#### SWALLOWED

■ Toxic effects may result from the accidental ingestion of the material; animal experiments indicate that ingestion of less than 40 gram may be fatal or may produce serious damage to the health of the individual.

■ Exposure to even extremely small amounts of beryllium can result in the inhibition of a number of metabolic pathways.

■ Beryllium even in its most highly soluble forms is poorly absorbed from the gastrointestinal tract.

#### EYE

■ This material can cause eye irritation and damage in some persons.

#### 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.

■ Beryllium causes the sensitivity of skin to increase.

It is an irritant and causes inflammation on contact, nodules and ulcers.

■ 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 normal handling, may produce severely toxic effects; these may be fatal.

■ 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.

■ Inhalation hazard is increased at higher temperatures.

■ 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.

■ Inhaled beryllium is not absorbed rapidly.

It accumulates in the bones, kidney and liver.

■ Inhalation of fume may aggravate a pre-existing respiratory condition such as asthma, bronchitis, emphysema.

## CHRONIC HEALTH EFFECTS

■ Toxic: 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.

There is some evidence that inhaling 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.

Chronic exposure to beryllium dusts and fumes may cause progressive lung damage and systemic disease including lung inflammation, joint pain, skin lesions, chills, fever, damage to the liver, kidney, spleen, lymph nodes and heart. The onset may be marked by weakness, fatigue, weight loss without cough or shortness of breath.

## Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
beryllium	7440-41-7	>99
as powder		

## Section 4 - FIRST AID MEASURES

#### SWALLOWED

· Give a slurry of activated charcoal in water to drink. NEVER GIVE AN UNCONSCIOUS PATIENT WATER TO DRINK. · At least 3 tablespoons in a glass of water should be given.

#### EYE

■ If this product comes in contact with the eyes: · Immediately hold eyelids apart and flush the eye continuously with 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. · DO NOT attempt to remove particles attached to or embedded in eye. · Lay victim down, on stretcher if available and pad BOTH eyes, make sure dressing does not press on the injured eye by placing thick pads under dressing, above and below the eye. · Seek urgent medical assistance, or transport to hospital.

## 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

- Acute berylliosis produces interstitial fibrotic disease rather than the simple focal nodular lesions seen in simple pneumoconiosis. Fibrotic lesions appear out of proportion to dust-laden macrophages.

## Section 5 - FIRE FIGHTING MEASURES

Vapour Pressure (mmHG):	Not applicable.
Upper Explosive Limit (%):	Not available
Specific Gravity (water=1):	1.848
Lower Explosive Limit (%):	Not available

## EXTINGUISHING MEDIA

- Metal dust fires need to be smothered with sand, inert dry powders.  
DO NOT USE WATER, CO2 or FOAM.  
· DO NOT use halogenated fire extinguishing agents.

## FIRE FIGHTING

- Alert Emergency Responders and tell them location and nature of hazard.
  - Wear full body protective clothing with breathing apparatus.
  - 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

- With the exception of the metals that burn in contact with air or water (for example, sodium), masses of combustible metals do not represent unusual fire risks because they have the ability to conduct heat away from hot spots so efficiently that the heat of combustion cannot be maintained - this means that it will require a lot of heat to ignite a mass of combustible metal. Generally, metal fire risks exist when sawdust, machine shavings and other metal 'fines' are present.
  - Metal powders, while generally regarded as non-combustible, may burn when metal is finely divided and energy input is high.
  - May react explosively with water.
  - May be ignited by friction, heat, sparks or flame.
  - Metal dust fires are slow moving but intense and difficult to extinguish.
  - Will burn with intense heat.
  - DO NOT disturb burning dust. Explosion may result if dust is stirred into a cloud, by providing oxygen to a large surface of hot metal.
  - Containers may explode on heating.
  - Dusts or fumes may form explosive mixtures with air.
  - May REIGNITE after fire is extinguished.
  - Gases generated in fire may be poisonous, corrosive or irritating.
  - DO NOT use water or foam as generation of explosive hydrogen may result.
- Decomposition may produce toxic fumes of: metal oxides.  
May emit poisonous fumes.

## FIRE INCOMPATIBILITY

- None known.

## PERSONAL PROTECTION

Glasses:  
Chemical goggles.  
Gloves:  
Respirator:  
Particulate

## 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

- Avoid all personal contact, including inhalation.

- Wear protective clothing when risk of exposure occurs.

### RECOMMENDED STORAGE METHODS

- 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.

All inner and sole packagings for substances that have been assigned to Packaging Groups I or II on the basis of inhalation toxicity criteria, must be hermetically sealed.

### 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
Canada - Prince Edward Island Occupational Exposure Limits	beryllium (Beryllium - Metal)		0.002		0.01				TLV Basis: lung cancer; berylliosis
US ACGIH Threshold Limit Values (TLV)	beryllium (Beryllium - Metal)		0.002		0.01				TLV Basis: lung cancer; berylliosis
Canada - Nova Scotia Occupational Exposure Limits	beryllium (Beryllium - Metal)		0.002		0.01				TLV Basis: lung cancer; berylliosis
Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances	beryllium (K Beryllium)		(See Table 14)						
Canada - Yukon Carcinogens with a Permitted Exposure	beryllium (Beryllium)		0.002						
Canada - Northwest Territories Occupational Exposure Limits (English)	beryllium (Beryllium)		0.002		0.006				
US - Michigan Exposure Limits for Air Contaminants	beryllium (Silicates (less than 1% crystalline silica) Talc (containing no asbestos), respirable dust)		2						
US - Michigan Exposure Limits for Air Contaminants	beryllium (Silicates (less than 1% crystalline silica) Talc (containing asbestos); use asbestos limit)							0.1	R 325.51311 et seq, Asbestos for General Industry
US - Michigan Exposure Limits for Air Contaminants	beryllium (Silicates (less than 1% crystalline silica) Soapstone, total dust)		6						

US - Hawaii Air Contaminant Limits	beryllium (Silicates (less than 1% crystalline silica) - Soapstone, total dust)	6			
US - Hawaii Air Contaminant Limits	beryllium (Silicates (less than 1% crystalline silica) - Mica (respirable dust))	3			
US - Washington Permissible exposure limits of air contaminants	beryllium (Silicates (less than 1% crystalline silica) Mica - Respirable fraction)	3	6		
US - Michigan Exposure Limits for Air Contaminants	beryllium (Silicates (less than 1% crystalline silica) Soapstone, respirable dust)	3			
US OSHA Permissible Exposure Levels (PELs) - Table Z3	beryllium (Silicates (less than 1% crystalline silica): Tremolite, asbestiforms (see 29 CFR 1910.1001))			0.1	
US - Idaho - Limits for Air Contaminants	beryllium (Silicates (less than 1% crystalline silic))	[3]			
US OSHA Permissible Exposure Levels (PELs) - Table Z1	beryllium (Silicates (less than 1% crystalline silica) - Talc (containing asbestos); use asbestos limit; see 29 CFR 1910.1001)	0.1			See Table Z-3; (STEL (Excursion limit)(as averaged over a sampling period of 30 minutes))
US OSHA Permissible Exposure Levels (PELs) - Table Z1	beryllium (Silicates (less than 1% crystalline silica) - Tremolite, asbestiform; see 1910.1001)	0.1			(STEL (Excursion limit)(as averaged over a sampling period of 30 minutes))
Canada - Ontario Occupational Exposure Limits	beryllium (Metal / Métal)	2			
Canada - Ontario Occupational Exposure Limits	beryllium (Metal / Métal)	1			
US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants	beryllium (Beryllium and beryllium compounds (as Be))	0.002	0.005 (30 min)	0.025	
US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants	beryllium (Beryllium and beryllium compounds (as Be))	See Table Z-2			

US - Oregon Permissible Exposure Limits (Z-2)	beryllium (Beryllium, and beryllium compounds (Z37.29-1970))	0.002		0.005	
Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)	beryllium (Beryllium, metal and compounds (as Be))	0.00015			
US - Wyoming Toxic and Hazardous Substances Table Z-2 Acceptable ceiling concentration, Acceptable maximum peak above the acceptable ceiling concentration for an 8-hr shift	beryllium (Beryllium and beryllium compounds (Z37.29-1970))	0.002		0.005	
Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits	beryllium (Beryllium and compounds, (as Be))	0.002	0.01		T20
US - Washington Permissible exposure limits of air contaminants	beryllium (Beryllium and beryllium compounds (as Be))	0.002	0.005	0.025	(STEL (30 minutes))
US - Michigan Exposure Limits for Air Contaminants	beryllium (Beryllium and beryllium compounds (as Be))	0.002		0.005	See Table G-2
US - Alaska Limits for Air Contaminants	beryllium (Beryllium and beryllium compounds (as Be))	0.002	0.005	0.025	
US - Hawaii Air Contaminant Limits	beryllium (Beryllium and beryllium compounds (as Be))	0.002	0.005	0.025	see Table 202-2
US OSHA Permissible Exposure Levels (PELs) - Table Z1	beryllium (Zirconium compounds (as Zr))	5			
US - California Permissible Exposure Limits for Chemical Contaminants	beryllium (Beryllium, and beryllium compounds as Be)	0.0002		0.025	
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants	beryllium (Beryllium and beryllium Compounds (as Be) (STEL - 30 minutes))	0.002	0.005	0.025	

US - Idaho - Acceptable Maximum Peak Concentrations	beryllium (Beryllium and beryllium compounds (Z37.29-1970))	2 ug/M3		5ug/M3	
US - Idaho - Limits for Air Contaminants	beryllium (Beryllium compounds (as Be))	[2]			
Canada - Alberta Occupational Exposure Limits	beryllium (Beryllium and compounds, as Be)	0.002	0.01		
US NIOSH Recommended Exposure Limits (RELs)	beryllium (Beryllium & beryllium compounds (as Be))	0.0005			See Appendix A; Ca
US OSHA Permissible Exposure Levels (PELs) - Table Z2	beryllium (Beryllium and beryllium compounds (Z37.29-1970))	0.002		0.005	
US - Minnesota Permissible Exposure Limits (PELs)	beryllium (Beryllium and beryllium compounds (as Be))	0.002	0.005 (30 min)	0.025	
Canada - Ontario Occupational Exposure Limits	beryllium (Beryllium and its compounds, as Be / Béryllium et ses composés, en Be)	0.002	0.01		
Canada - British Columbia Occupational Exposure Limits	beryllium (Beryllium and compounds, as Be, Inhalable Revised 2009; 2010)	0.002	0.01		Skin; S, A1, 1

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.

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: 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.
- Protective gloves eg. Leather gloves or gloves with Leather facing.

#### 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.
  - 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.
- For large scale or continuous use: tight-weave non-static clothing (no metallic fasteners, cuffs or pockets); & non sparking safety footwear.

#### 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.
- For large scale or continuous use:
- Spark-free, earthed ventilation system, venting directly to the outside and separate from usual ventilation systems
  - Provide dust collectors with explosion vents.

## Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

### PHYSICAL PROPERTIES

Solid.  
Does not mix with water.  
Sinks in water.

State	Divided solid	Molecular Weight	9.01
Melting Range (°F)	2323- 2341	Viscosity	Not Applicable
Boiling Range (°F)	5378	Solubility in water (g/L)	Insoluble
Flash Point (°F)	Not applicable	pH (1% solution)	Not applicable.
Decomposition Temp (°F)	Not available.	pH (as supplied)	Not applicable
Autoignition Temp (°F)	1200	Vapour Pressure (mmHG)	Not applicable.
Upper Explosive Limit (%)	Not available	Specific Gravity (water=1)	1.848
Lower Explosive Limit (%)	Not available	Relative Vapor Density (air=1)	Not applicable.
Volatile Component (%vol)	Not applicable	Evaporation Rate	Not applicable

### APPEARANCE

Odourless greyish white metal powder/ shape. Insoluble in cold water. Very slightly soluble in hot water. Soluble in acids (not nitric) and alkalis.



## Section 10 - CHEMICAL STABILITY

### CONDITIONS CONTRIBUTING TO INSTABILITY

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

### STORAGE INCOMPATIBILITY

- Many metals may incandesce, react violently, ignite or react explosively upon addition of concentrated nitric acid.
- Some metals can react exothermically with oxidizing acids to form noxious gases.
- Very reactive metals have been known to react with halogenated hydrocarbons, sometimes forming explosive compounds (for example, copper dissolves when heated in carbon tetrachloride).
- Many metals in elemental form react exothermically with compounds having active hydrogen atoms (such as acids and water) to form flammable hydrogen gas and caustic products.
- Elemental metals may react with azo/diazo compounds to form explosive products.
- Some elemental metals form explosive products with halogenated hydrocarbons.
- Reacts with acids producing flammable / explosive hydrogen (H2) gas.
- Metals and their oxides or salts may react violently with chlorine trifluoride and bromine trifluoride.
- These trifluorides are hypergolic oxidisers. They ignites on contact (without external source of heat or ignition) with recognised fuels - contact with these materials, following an ambient or slightly elevated temperature, is often violent and may produce ignition.
- The state of subdivision may affect the results.

#### Beryllium

- evolves explosive hydrogen gas following contact with acids or alkalis
- forms shock-sensitive mixtures with some chlorinated solvents, such as carbon tetrachloride and trichloroethylene
- reacts violently with chlorine, fluorine, lithium, phosphorus
- is incompatible with alkalis, chlorinated hydrocarbons, halocarbons, oxidisable agents and oxidisers.

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

## Section 11 - TOXICOLOGICAL INFORMATION

beryllium

### TOXICITY AND IRRITATION

#### BERYLLIUM:

- unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.
- Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's edema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type.

No data of toxicological significance identified in literature search but.

WARNING: Beryllium and compounds are classified by IARC as

Group 1- CARCINOGENIC TO HUMANS

Beryllium oxide fume is very toxic to the respiratory tract, lungs and skin and is quick acting.

WARNING: This substance has been classified by the IARC as Group 1: CARCINOGENIC TO HUMANS.

Tenth Annual Report on Carcinogens: Substance known to be Carcinogenic  
[National Toxicology Program: U.S. Dep. of Health and Human Services 2002].

Mutation DNA damage Human

Tumorigenic - neoplastic by RTECS criteria.

### CARCINOGEN

beryllium	US - Rhode Island Hazardous Substance List	IARC	C
BERYLLIUM	US Environmental Defense Scorecard Recognized Carcinogens	Reference(s)	P65
BERYLLIUM	US Environmental Defense Scorecard Suspected Carcinogens	Reference(s)	P65
METALS	US Environmental Defense Scorecard Suspected Carcinogens	Reference(s)	P65-MC
Beryllium	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; IARC; IRIS; NTP 11th ROC

## 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
beryllium	No Data Available	No Data Available	LOW	

## Section 13 - DISPOSAL CONSIDERATIONS

### US EPA Waste Number & Descriptions

#### A. General Product Information

Ignitability characteristic: use EPA hazardous waste number D001 (waste code I)

#### B. Component Waste Numbers

When beryllium is present as a solid waste as a discarded commercial chemical product, off-specification species, as a container residue, or a spill residue, use EPA waste number P015 (waste code T).

### 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: UN1567 PG: II

Label Codes: 6.1, 4.1 Special provisions: IB8, IP2, IP4, T3,

TP33

Packaging: Exceptions: 153 Packaging: Non- bulk: 212

Packaging: Exceptions: 153 Quantity limitations: 15 kg

Passenger aircraft/rail:

Quantity Limitations: Cargo 50 kg Vessel stowage: Location: A aircraft only:

Vessel stowage: Other: None

Hazardous materials descriptions and proper shipping names:

Beryllium, powder

### Air Transport IATA:

ICAO/IATA Class: 6.1 (4.1) ICAO/IATA Subrisk: None

UN/ID Number: 1567 Packing Group: II

Special provisions: None

Cargo Only

Packing Instructions: 50 kg Maximum Qty/Pack: 675

Passenger and Cargo Passenger and Cargo

Packing Instructions: 15 kg Maximum Qty/Pack: 668

Passenger and Cargo Limited Quantity Passenger and Cargo Limited Quantity

Packing Instructions: 1 kg Maximum Qty/Pack: Y644

Shipping Name: BERYLLIUM POWDER

### Maritime Transport IMDG:

IMDG Class: 6.1 IMDG Subrisk: 4.1

UN Number: 1567 Packing Group: II

EMS Number: F-G , S-G Special provisions: None

Limited Quantities: 500 g

Shipping Name: BERYLLIUM POWDER

## Section 15 - REGULATORY INFORMATION

### beryllium (CAS: 7440-41-7) is found on the following regulatory lists;

"Canada - Northwest Territories Occupational Exposure Limits (English)", "Canada - Nova Scotia Occupational Exposure Limits", "Canada - Prince Edward Island Occupational Exposure Limits", "Canada - Prince Edward Island Occupational Exposure Limits - Carcinogens", "Canada - Saskatchewan Environmental Persistent or Chronic Hazardous Substances", "Canada - Yukon Carcinogens with a Permitted Exposure", "Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances", "Canada ARET (Accelerated Reduction / Elimination of Toxics) Substance List", "Canada Domestic Substances List (DSL)", "Canada Ingredient Disclosure List (SOR/88-64)", "Canada Toxicological Index Service - Workplace Hazardous Materials Information System - WHMIS (English)", "International Chemical Secretariat

(ChemSec) REACH SIN\* List (\*Substitute It Now!) 1.0", "US - California Air Toxics ""Hot Spots"" List (Assembly Bill 2588) Substances for which emissions must be quantified", "US - California Occupational Safety and Health Regulations (CAL/OSHA) - Hazardous Substances List", "US - California Proposition 65 - Carcinogens", "US - Connecticut Hazardous Air Pollutants", "US - Massachusetts Oil & Hazardous Material List", "US - New Jersey Right to Know Hazardous Substances", "US - Pennsylvania - Hazardous Substance List", "US - Rhode Island Hazardous Substance List", "US - Vermont Hazardous Constituents", "US - Vermont Hazardous Waste - Acutely Hazardous Wastes", "US - Washington Dangerous waste constituents list", "US - Washington Discarded Chemical Products List - ""P"" Chemical Products", "US ACGIH Threshold Limit Values (TLV)", "US ACGIH Threshold Limit Values (TLV) - Carcinogens", "US ATSDR Minimal Risk Levels for Hazardous Substances (MRLs)", "US CERCLA Priority List of 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 EPA National Priorities List - Superfund Chemical Data Matrix (SCDM) - Hazard Ranking System - Hazardous Substance Benchmarks", "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 RCRA (Resource Conservation & Recovery Act) - Hazardous Constituents - Appendix VIII to 40 CFR 261", "US RCRA (Resource Conservation & Recovery Act) - List of Hazardous Wastes", "US RCRA (Resource Conservation & Recovery Act) - Phase 4 LDR Rule - Universal Treatment Standards", "US Toxic Substances Control Act (TSCA) - Inventory", "WHO Guidelines for Drinking-water Quality - Chemicals excluded from guideline value derivation"

## 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](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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