

# Hexaammineruthenium(III) chloride: sc-228281



The Power to Question

## MATERIAL SAFETY DATA SHEET

### 1 Identification of substance:

**Product Name:** Hexaammineruthenium(III) chloride  
**Catalog Number:** sc-228281  
**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

### 2 Hazards identification

Classification of the substance or mixture



GHS06 Skull and crossbones

H301 Toxic if swallowed.  
H311 Toxic in contact with skin.

Classification according to Directive 67/548/EEC or Directive 1999/45/EC



T; Toxic

R24/25: Toxic in contact with skin and if swallowed.

Information concerning particular hazards for human and environment: Not applicable

Label elements

Labelling according to EU guidelines:

Code letter and hazard designation of product:  
T Toxic

Risk phrases:  
24/25 Toxic in contact with skin and if swallowed.

Safety phrases:  
20 When using do not eat or drink.  
27 Take off immediately all contaminated clothing.  
36/37 Wear suitable protective clothing and gloves.  
45 In case of accident or if you feel unwell, seek medical advice immediately.  
60 This material and its container must be disposed of as hazardous waste.

Hazard description:

WHMIS classification

D1A - Very toxic material causing immediate and serious toxic effects



Classification system

HMIS ratings (scale 0-4)

(Hazardous Materials Identification System)

HEALTH	3
FIRE	1
REACTIVITY	1

Health (acute effects) = 3  
Flammability = 1  
Reactivity = 1

Other hazards

Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

### 3 Composition/information on ingredients

**Chemical characterization: Substances**  
**CAS# Description:**  
14282-91-8 Hexaammineruthenium(III) chloride  
**Identification number(s):**  
**EC number:** 238-176-8

### 4 First aid measures

**Description of first aid measures**

**General information**

Immediately remove any clothing soiled by the product.  
In case of irregular breathing or respiratory arrest provide artificial respiration.

**After inhalation**

Supply fresh air. If required, provide artificial respiration. Keep patient warm.  
Seek immediate medical advice.

**After skin contact**

Immediately wash with water and soap and rinse thoroughly.  
Seek immediate medical advice.

**After eye contact**

Rinse opened eye for several minutes under running water. Then consult a doctor.

**After swallowing** Do not induce vomiting; immediately call for medical help.

**Information for doctor**

**Most important symptoms and effects, both acute and delayed**

No further relevant information available.

**Indication of any immediate medical attention and special treatment needed**

No further relevant information available.

### 5 Firefighting measures

**Extinguishing media**

**Suitable extinguishing agents**

Carbon dioxide, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

**Special hazards arising from the substance or mixture**

If this product is involved in a fire, the following can be released:

Nitrogen oxides (NOx)

Hydrogen chloride (HCl)

Metal oxide fume

**Advice for firefighters**

**Protective equipment:**

Wear self-contained respirator.

Wear fully protective impervious suit.

### 6 Accidental release measures

**Personal precautions, protective equipment and emergency procedures**

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

**Environmental precautions:**

Do not allow material to be released to the environment without proper governmental permits.

**Methods and material for containment and cleaning up:**

Dispose contaminated material as waste according to item 13.

**Reference to other sections**

See Section 7 for information on safe handling

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

### 7 Handling and storage

**Handling**

**Precautions for safe handling**

Keep container tightly sealed.

Ensure good ventilation at the workplace.

**Information about protection against explosions and fires:** No information known.

**Conditions for safe storage, including any incompatibilities**

**Storage**

**Requirements to be met by storerooms and receptacles:** Refrigerate

**Information about storage in one common storage facility:**

Protect from heat.

Store away from oxidizing agents.

**Further information about storage conditions:**

Keep container tightly sealed.

Refrigerate

**Specific end use(s)** No further relevant information available.

## 8 Exposure controls/personal protection

### Additional information about design of technical systems:

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

### Control parameters

#### Components with limit values that require monitoring at the workplace:

The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

**Additional information:** No data

### Exposure controls

#### Personal protective equipment

##### General protective and hygienic measures

The usual precautionary measures for handling chemicals should be followed.

Keep away from foodstuffs, beverages and feed.

Remove all soiled and contaminated clothing immediately.

Wash hands before breaks and at the end of work.

Store protective clothing separately.

Avoid contact with the eyes and skin.

Maintain an ergonomically appropriate working environment.

**Breathing equipment:** Use suitable respirator when high concentrations are present.

#### Protection of hands:

Impervious gloves

Check protective gloves prior to each use for their proper condition.

The selection of suitable gloves not only depends on the material, but also on quality.

Quality will vary from manufacturer to manufacturer.

**Eye protection:** Safety glasses

**Body protection:** Protective work clothing.

## 9 Physical and chemical properties

<b>Information on basic physical and chemical properties</b>	
<b>General Information</b>	
<b>Appearance:</b>	
Form:	Powder
Formula:	C13H18N6Ru
Weight:	309.61
pH-value:	Not applicable.
<b>Change in condition</b>	
Melting point/Melting range:	Not determined
Boiling point/Boiling range:	Not determined
Sublimation temperature / start:	Not determined
Flammability (solid, gaseous)	Not determined.
Ignition temperature:	Not determined
Decomposition temperature:	Not determined
Auto igniting:	Not determined.
<b>Explosion limits:</b>	
Lower:	Not determined
Upper:	Not determined
Vapor pressure:	Not applicable.
Density:	Not determined
Relative density	Not determined.
Vapor density	Not applicable.
Evaporation rate	Not applicable.
Solubility in / Miscibility with	
Water:	Soluble
Segregation coefficient (n-octanol/water):	Not determined.
<b>Viscosity:</b>	
dynamic:	Not applicable.
kinematic:	Not applicable.
Other information	No further relevant information available.

## 10 Stability and reactivity

### Reactivity

#### Chemical stability

##### Thermal decomposition / conditions to be avoided:

Decomposition will not occur if used and stored according to specifications.

**Possibility of hazardous reactions** No dangerous reactions known

**Incompatible materials:**

Oxidizing agents

Heat

**Hazardous decomposition products:**

Nitrogen oxides

Hydrogen chloride (HCl)

Metal oxide fume

## 11 Toxicological information

**Information on toxicological effects**

**Acute toxicity:**

**Primary irritant effect:**

**on the skin:** May cause irritation

**on the eye:** May cause irritation

**Sensitization:** No sensitizing effects known.

**Additional toxicological information:**

To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

Danger through skin absorption.

No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

The Registry of Toxic Effects of Chemical Substances (RTECS) contains reproductive and/or mutation data for components in this product.

## 12 Ecological information

**Toxicity**

**Aquatic toxicity:** No further relevant information available.

**Persistence and degradability** No further relevant information available.

**Behavior in environmental systems:**

**Bioaccumulative potential** No further relevant information available.

**Mobility in soil** No further relevant information available.

**Additional ecological information:**

**General notes:**

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

Do not allow material to be released to the environment without proper governmental permits.

**Results of PBT and vPvB assessment**

**PBT:** Not applicable.

**vPvB:** Not applicable.

**Other adverse effects** No further relevant information available.

## 13 Disposal considerations

**Waste treatment methods**

**Recommendation** Consult state, local or national regulations to ensure proper disposal.




**Uncleaned packagings:**

**Recommendation:** Disposal must be made according to official regulations.

**Recommended cleansing agent:** Water, if necessary with cleansing agents.

## 14 Transport information

<b>UN-Number</b>	
<b>DOT, ADR, IMDG, IATA</b>	UN3288
<b>UN proper shipping name</b>	
<b>DOT, IMDG, IATA</b>	TOXIC SOLID, INORGANIC, N.O.S. (Hexaamineruthenium(III) chloride)
<b>ADR</b>	3288 TOXIC SOLID, INORGANIC, N.O.S. (Hexaamineruthenium(III) chloride)

<b>Transport hazard class(es)</b>	
DOT	
	
<b>Class</b>	6.1 Toxic substances.
<b>Label</b>	6.1
ADR	
	
<b>Class</b>	6.1 (T5) Toxic substances
<b>Label</b>	6.1
IMDG, IATA	
	
<b>Class</b>	6.1 Toxic substances.
<b>Label</b>	6.1
<b>Packing group</b>	
DOT, ADR, IMDG, IATA	III
<b>Environmental hazards:</b>	
Marine pollutant:	No
<b>Special precautions for user</b>	Warning: Toxic substances
<b>Danger code (Kemler):</b>	60
<b>EMS Number:</b>	F-A,S-A
<b>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</b>	Not applicable.
<b>UN "Model Regulation":</b>	UN3288, TOXIC SOLID, INORGANIC, N.O.S. (Hexaamineruthenium(III) chloride), 6.1, III

## 15 Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture

Product related hazard informations:

Hazard symbols:

T Toxic

Risk phrases:

24/25 Toxic in contact with skin and if swallowed.

Safety phrases:

20 When using do not eat or drink.

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

National regulations

This product is not listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical Substance Inventory. Use of this product is restricted to research and development only.

Some or all of the components of this product are not listed on the Canadian Domestic Substances List (DSL) or the Canadian Non-Domestic Substances List (NDSL).

Information about limitation of use: For use only by technically qualified individuals.

Other regulations, limitations and prohibitive regulations

REACH - Pre-registered substances Substance is listed.

Substances of very high concern (SVHC) according to REACH, Article 57

Substance is not listed.

Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

## 16 Other information:

The above information is believed to be correct but does not purport to be complete and should be used only as a guide. The burden of safe use of this material rests entirely with the user.

11/15/2012