



# SZABO SCANDIC

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## Produktinformation



Forschungsprodukte & Biochemikalien



Zellkultur & Verbrauchsmaterial



Diagnostik & molekulare Diagnostik



Laborgeräte & Service

Weitere Information auf den folgenden Seiten!  
See the following pages for more information!



### Lieferung & Zahlungsart

siehe unsere [Liefer- und Versandbedingungen](#)

### Zuschläge

- Mindermengenzuschlag
- Trockeneiszuschlag
- Gefahrgutzuschlag
- Expressversand

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# (1,5-Cyclooctadiene)bis(triphenylphosphine)rhodium(I) hexafluorophosphate dichloromethane complex (1:1)

sc-229833



The Power is Question

Material Safety Data Sheet

Hazard Alert Code Key: **EXTREME** **HIGH** **MODERATE** **LOW**

## Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

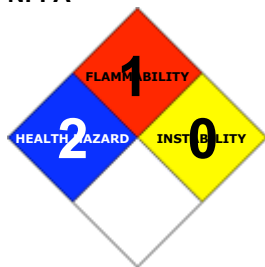
### PRODUCT NAME

(1,5-Cyclooctadiene)bis(triphenylphosphine)rhodium(I) hexafluorophosphate dichloromethane complex (1:1)

### 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

"C44-H42-F6-P3-Rh. PF6.CH2Cl2", "(1, 5-cyclooctadiene)bis(triphenylphosphine)rhodium (I) hexafluorophosphate", "dichloromethane complex (1:1)"

## Section 2 - HAZARDS IDENTIFICATION

### CHEMWATCH HAZARD RATINGS

	Min	Max
Flammability:	1	
Toxicity:	0	
Body Contact:	2	
Reactivity:	1	
Chronic:	2	

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



### CANADIAN WHMIS SYMBOLS



## EMERGENCY OVERVIEW

### RISK

Irritating to eyes, respiratory system and skin.

### POTENTIAL HEALTH EFFECTS

#### ACUTE HEALTH EFFECTS

#### SWALLOWED

■ The material has NOT been classified as "harmful by ingestion". This is because of the lack of corroborating animal or human evidence.

<p>

■ The platinumoids and their compounds as a group are generally poorly absorbed from the gastrointestinal tract and absorption by other parenteral routes, excluding the intravenous (i.v.) route, is also negligible. Absorption by inhalation is generally higher. Following inhalation the majority of the dose is retained in the lungs and upper respiratory tract. After i.v. injection most platinumoids distribute in the soft tissues. Excretion is mainly in the urine. (Orally administered platinumoids are excreted primarily in the faeces.).

#### EYE

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

#### SKIN

■ This material can cause inflammation of the skin on contact in some persons.

■ The material may accentuate any pre-existing dermatitis condition.

■ Skin contact is not thought to have harmful health effects, however 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.

#### INHALED

■ The material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage.

■ 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.

■ Acute effects of fluoride inhalation include irritation of nose and throat, coughing and chest discomfort. A single acute over-exposure may even cause nose bleed.

<p>

#### CHRONIC HEALTH EFFECTS

■ Long-term exposure to respiratory irritants may result in disease of the airways involving difficult breathing and related systemic problems.

There has been some concern that this material can cause cancer or mutations but there is not enough data to make an assessment.

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.

<p>

Extended exposure to inorganic fluorides causes fluorosis, which includes signs of joint pain and stiffness, tooth discoloration, nausea and vomiting, loss of appetite, diarrhea or constipation, weight loss, anemia, weakness and general unwellness. There may also be frequent urination and thirst.

<p>

Rhodium compounds may produce renal toxicity as well as toxic symptoms of the central nervous system.

Limited evidence exists which suggest that rhodium compounds might be carcinogens.

Rhodium and inorganic rhodium compounds are classified in category 3B as suspected carcinogen by The Senate Commission of the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation). The administration of rhodium chloride (5 mg/l) produced lymphoma-leukaemia tumours in mice.

Studies in chick embryos demonstrate teratogenic properties of rhodium chloride as signs of micromelia (reduction of limb size) and inhibition of feather growth have been reported.

## Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
(1,5-cyclooctadiene)bis(triphenylphosphine)rhodium(I) PF6/	35238-97-2	>98

## Section 4 - FIRST AID MEASURES

#### SWALLOWED

· Immediately give a glass of water. · First aid is not generally required. If in doubt, contact a Poisons Information Center or a doctor.

## 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

■ Treat symptomatically.

## Section 5 - FIRE FIGHTING MEASURES

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

## EXTINGUISHING MEDIA

· Foam.  
· Dry chemical powder.

## FIRE FIGHTING

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

## 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>), hydrogen chloride, phosgene, hydrogen fluoride, phosphorus oxides (PO<sub>x</sub>), metal oxides, other pyrolysis products typical of burning organic material.

May emit poisonous fumes.

May emit corrosive 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 all spills immediately.  
· Avoid breathing dust and contact with skin and eyes.

### MAJOR SPILLS

■ Moderate hazard.

· CAUTION: Advise personnel in area.  
· 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

· Polyethylene or polypropylene container.

· Check all containers are clearly labelled and free from leaks.

**STORAGE REQUIREMENTS**

- Store in original containers.
  - Keep containers securely sealed.
- Air- and moisture sensitive.

**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>	Notes
Canada - Northwest Territories Occupational Exposure Limits (English)	(1,5-cyclooctadiene)bis(triphenylphosphine)rhodium(I) PF6/ (Rhodium, Metal Fume and dusts (as Rh))		0.1		0.3	
Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances	(1,5-cyclooctadiene)bis(triphenylphosphine)rhodium(I) PF6/ (Rhodium - Metal fume and dusts (as Rh))	-	0.1	-	0.3	
US NIOSH Recommended Exposure Limits (RELs)	(1,5-cyclooctadiene)bis(triphenylphosphine)rhodium(I) PF6/ (Rhodium (soluble compounds, as Rh))		0.001			
Canada - Northwest Territories Occupational Exposure Limits (English)	(1,5-cyclooctadiene)bis(triphenylphosphine)rhodium(I) PF6/ (Rhodium, Metal Fume and Soluble salts (as Rh))		0.001		0.003	
Canada - Nova Scotia Occupational Exposure Limits	(1,5-cyclooctadiene)bis(triphenylphosphine)rhodium(I) PF6/ (Rhodium - Soluble compounds (as Rh))		0.01			TLV Basis: asthma
US OSHA Permissible Exposure Levels (PELs) - Table Z1	(1,5-cyclooctadiene)bis(triphenylphosphine)rhodium(I) PF6/ (Rhodium (as Rh), soluble compounds)		0.001			
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants	(1,5-cyclooctadiene)bis(triphenylphosphine)rhodium(I) PF6/ (Rhodium (as Rh), soluble compounds)		0.001			
US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants	(1,5-cyclooctadiene)bis(triphenylphosphine)rhodium(I) PF6/ (Rhodium (as Rh), soluble compounds)		0.001			
US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants	(1,5-cyclooctadiene)bis(triphenylphosphine)rhodium(I) PF6/ (Rhodium (as Rh), soluble compounds)		0.001			
Canada - Ontario Occupational Exposure Limits	(1,5-cyclooctadiene)bis(triphenylphosphine)rhodium(I) PF6/ (Rhodium, water-soluble compounds of, including chloride, nitrate, and sulfate (as rhodium))		0.01			

US - Minnesota Permissible Exposure Limits (PELs)	(1,5-cyclooctadiene)bis(triphenylphosphine)rhodium(I) PF6/ (Rhodium (as Rh), soluble compounds)	0.001	
US - Idaho - Limits for Air Contaminants	(1,5-cyclooctadiene)bis(triphenylphosphine)rhodium(I) PF6/ (Rhodium (as Rh), soluble compounds)	0.001	
US - Michigan Exposure Limits for Air Contaminants	(1,5-cyclooctadiene)bis(triphenylphosphine)rhodium(I) PF6/ (Rhodium, Soluble compounds (as Rh))	0.001	
US - Washington Permissible exposure limits of air contaminants	(1,5-cyclooctadiene)bis(triphenylphosphine)rhodium(I) PF6/ (Rhodium (as Rh) - Soluble compounds, salts)	0.001	0.003
Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits	(1,5-cyclooctadiene)bis(triphenylphosphine)rhodium(I) PF6/ (Rhodium, (as Rh): Soluble compounds)	0.01	0.03
US - Alaska Limits for Air Contaminants	(1,5-cyclooctadiene)bis(triphenylphosphine)rhodium(I) PF6/ (Rhodium (as Rh), soluble compounds)	0.001	
US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants	(1,5-cyclooctadiene)bis(triphenylphosphine)rhodium(I) PF6/ (Rhodium (as Rh), soluble compounds)	0.001	
Canada - Prince Edward Island Occupational Exposure Limits	(1,5-cyclooctadiene)bis(triphenylphosphine)rhodium(I) PF6/ (Rhodium - Soluble compounds (as Rh))	0.01	TLV Basis: asthma
US - Oregon Permissible Exposure Limits (Z-1)	(1,5-cyclooctadiene)bis(triphenylphosphine)rhodium(I) PF6/ (Rhodium, as Rh Soluble salts)	0.001	
Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)	(1,5-cyclooctadiene)bis(triphenylphosphine)rhodium(I) PF6/ (Rhodium: Soluble compounds (as Rh))	0.001	
Canada - British Columbia Occupational Exposure Limits	(1,5-cyclooctadiene)bis(triphenylphosphine)rhodium(I) PF6/ (Rhodium - Soluble compounds, as Rh)	0.001	0.003
Canada - Alberta Occupational Exposure Limits	(1,5-cyclooctadiene)bis(triphenylphosphine)rhodium(I) PF6/ (Rhodium, as Rh - Soluble compounds)	0.01	
US ACGIH Threshold Limit Values (TLV)	(1,5-cyclooctadiene)bis(triphenylphosphine)rhodium(I) PF6/ (Rhodium - Soluble compounds (as Rh))	0.01	TLV Basis: asthma
Canada - Nova Scotia Occupational Exposure Limits	(1,5-cyclooctadiene)bis(triphenylphosphine)rhodium(I) PF6/ (Fluorides (as F))	2.5	TLV Basis: bone damage; fluorosis. BEI
Canada - Ontario Occupational Exposure Limits	(1,5-cyclooctadiene)bis(triphenylphosphine)rhodium(I) PF6/ (Fluorides (as fluoride))	2.5	

US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants	(1,5-cyclooctadiene)bis(triphenylphosphine)rhodium(I) PF6/ (Fluorides (as F))	2.5	
Canada - Northwest Territories Occupational Exposure Limits (English)	(1,5-cyclooctadiene)bis(triphenylphosphine)rhodium(I) PF6/ (Fluoride (as F))	2.5	5
Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits	(1,5-cyclooctadiene)bis(triphenylphosphine)rhodium(I) PF6/ (Fluoride, (as F))	2.5	5
US - Alaska Limits for Air Contaminants	(1,5-cyclooctadiene)bis(triphenylphosphine)rhodium(I) PF6/ (Fluorides (as F))	2.5	
US - Michigan Exposure Limits for Air Contaminants	(1,5-cyclooctadiene)bis(triphenylphosphine)rhodium(I) PF6/ (Fluorides (as F))	2.5	

ENDOELTABLE

## PERSONAL PROTECTION



## RESPIRATOR

Particulate  
Consult your EHS staff for recommendations

## EYE

- Safety glasses with side shields.
- Chemical goggles.

## HANDS/FEET

- 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.

Experience indicates that the following polymers are suitable as glove materials for protection against undissolved, dry solids, where abrasive particles are not present.

- polychloroprene
- nitrile rubber
- butyl rubber
- fluorocautchouc
- polyvinyl chloride

Gloves should be examined for wear and/ or degradation constantly.

## OTHER

- Overalls.
- P.V.C. apron.
- Barrier cream.
- Skin cleansing cream.

- Eye wash 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.

Does not mix with water.

State	Divided solid	Molecular Weight	965.58
Melting Range (°F)	419	Viscosity	Not Applicable
Boiling Range (°F)	Not available	Solubility in water (g/L)	Partly miscible
Flash Point (°F)	Not available	pH (1% solution)	Not applicable
Decomposition Temp (°F)	Not available.	pH (as supplied)	Not applicable
Autoignition Temp (°F)	Not available	Vapour Pressure (mmHG)	Negligible
Upper Explosive Limit (%)	Not available.	Specific Gravity (water=1)	Not available
Lower Explosive Limit (%)	Not available	Relative Vapor Density (air=1)	Not Applicable
Volatile Component (%vol)	Negligible	Evaporation Rate	Not applicable

### APPEARANCE

Orange powder; does not mix well with water.

## Section 10 - CHEMICAL STABILITY

### CONDITIONS CONTRIBUTING TO INSTABILITY

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

### STORAGE INCOMPATIBILITY

- Several platinum compounds, including trimethylplatinum derivatives are explosively unstable.
- Some compounds of the other platinum group metals are also of limited stability.

Salts of inorganic fluoride:

- react with water forming acidic solutions.
- are violent reactive with boron, bromine pentafluoride, bromine trifluoride, calcium disilicide, calcium hydride, oxygen difluoride, platinum, potassium.
- in aqueous solutions are incompatible with sulfuric acid, alkalis, ammonia, aliphatic amines, alkanolamines, alkylene oxides, amides, epichlorohydrin, isocyanates, nitromethane, organic anhydrides, vinyl acetate.
- corrode metals in presence of moisture
- may be incompatible with glass and porcelain.

Avoid reaction with oxidizing agents.

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

## Section 11 - TOXICOLOGICAL INFORMATION

(1,5-CYCLOOCTADIENE)BIS(TRIPHENYLPHOSPHINE)RHODIUM(I) PF6/

### TOXICITY AND IRRITATION

- unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.
- Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production.

No significant acute toxicological data identified in literature search.

## Section 12 - ECOLOGICAL INFORMATION



No data

## Section 13 - DISPOSAL CONSIDERATIONS

### 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. 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.

For small quantities:

- Cautiously dissolve in water.
- Neutralize with sodium carbonate or if product does not dissolve.
- 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

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: DOT, IATA, IMDG

## Section 15 - REGULATORY INFORMATION



### REGULATIONS

**(1,5-cyclooctadiene)bis(triphenylphosphine)rhodium(I) PF6/ (CAS: 35238-97-2) is found on the following regulatory lists;**

"Canada - Northwest Territories Occupational Exposure Limits (English)", "Canada - Nova Scotia Occupational Exposure Limits", "Canada - Ontario Occupational Exposure Limits", "Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits", "US - Alaska Limits for Air Contaminants", "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 - Michigan Exposure Limits for Air Contaminants", "US - Pennsylvania - Hazardous Substance List", "US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants"

## Section 16 - OTHER INFORMATION

### LIMITED EVIDENCE

- Cumulative effects may result following exposure\*.
- Limited evidence of a carcinogenic effect\*.

\* (limited evidence).

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- 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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