



catapowerinc.com

# Safety Data Sheet

Version 1.1

Revision date: 17 March 2023

## Section 1: Identification

### 1.1 Product identifier

Product name: Grubbs Catalyst, 1<sup>st</sup> generation, 3-methyl-2-butenylidene variant  
Other names: Dichloro(3-methyl-2-butenylidene)bis(tricyclohexylphosphine)ruthenium(II)  
Product code: 02-01-2001  
CAS number: 194659-03-5

### 1.2 Relevant uses

Recommended use: Chemicals for laboratory evaluation

### 1.3 Supplier details

Manufacturer: Catapower, Inc.  
2265 E. Foothill Blvd.  
Pasadena, CA 91107  
info@catapowerinc.com  
Phone: (626) 657-0386

### 1.4 Emergency telephone number

Emergency phone: (800) 424-9300  
CHEMTREC is available at the number above 24 hours/day, 7 days/week.

## Section 2: Hazard(s) identification

### 2.1 Classification of the substance or mixture

**GHS Classification: 29 CFR 1910 (OSHA HCS)**

Flammable solids [Category 1], H228

For the full text of the H-statements mentioned in this Section, see Section 16.

### 2.2 GHS Label elements, including precautionary statements

Pictogram



Signal word Danger

Hazard statement(s)

H228 Flammable solid.

Precautionary statement(s)

P210 Keep away from heat, hot surface, open flames, and sparks. No smoking.

P240 Ground/bond container and receiving equipment.

P241 Use explosion-proof equipment

P280 Wear protective gloves/ eye protection/ face protection.

P370 + P378 In case of fire, use dry sand, dry chemical, or alcohol-resistant foam to extinguish.

**2.1 Classification of the substance or mixture**

None.

**Section 3: Composition/information on ingredients****3.2 Mixtures**

**Components:** Grubbs Catalyst, 1<sup>st</sup> generation 3-methyl-2-butenylidene  
**Molecular weight:** 800.95 g/mol  
**Chemical formula:** C<sub>41</sub>H<sub>74</sub>Cl<sub>2</sub>P<sub>2</sub>Ru  
**Concentration:** >= 97%  
**CAS number:** 194659-03-5

Component		Classification	Concentration
CAS-No.	2622-14-2	Skin Irrit. 2; Eye Irrit. 2A; STOT	>= 1 - < 5 %
EC-No.	220-069-2	SE 3; H315, H319, H#315	

**Section 4: First aid measures****4.1 Description of necessary first-aid instructions**

**General guidance:** Move out of contaminated area. Consult a physician.  
**If inhaled:** Remove person to fresh air. Give artificial respiration if not breathing. Get medical advice/attention.  
**In case of skin contact:** Remove contaminated clothing. Wash off with plenty of soap and water. Get medical advice/attention.  
**In case of eye contact:** Rinse eyes with water for at least 15 minutes. Remove contact lenses, if present, and continue rinsing. Get medical advice/attention.  
**If swallowed:** Do not induce vomiting. If conscious, rinse mouth with water. Get medical advice/attention.

**4.2 Most important symptoms/effects**

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11.

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

No data available.

**Section 5: Firefighting measures****5.1 Suitable extinguishing media**

Use water spray, alcohol-resistant foam, dry chemical, or carbon dioxide.

**5.2 Specific hazards arising from the chemical**

Carbon oxides, Hydrogen chloride gas, Phosphorus oxides, Ruthenium oxide.

**5.3 Recommendations for firefighters**

Wear self-contained breathing apparatus for firefighting if necessary.

**5.4 Further information**

Cool unopened containers with water spray.

## Section 6: Accidental release measures

### 6.1 Personal precautions, protective equipment, and emergency procedures

Use personal protective equipment as recommended in Section 8. Avoid dust formation. Avoid breathing aerosol. Remove all sources of ignition. Ensure adequate ventilation. Evacuate personnel to safe areas.

### 6.2 Environmental precautions

Do not let product enter drains.

### 6.3 Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust. Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13). Keep in suitable, closed containers for disposal.

### 6.4 Reference to other sections

For disposal see section 13

## Section 7: Handling and storage

### 7.1 Precautions for safe handling

Use personal protective equipment as recommended in Section 8. Avoid formation of dust. Avoid breathing dust and aerosol. Further processing of material may form combustible dusts. Avoid contact with skin, eyes, and clothing. Avoid ingestion. Use in appropriately exhaust ventilated area. Keep away from source of ignition. Take measures to prevent build up of electrostatic charge.

### 7.2 Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place.

Recommended storage temperature 2 – 8 °C.

Do not store above 25 °C. Protect from direct sunlight. Handle and store under inert gas. Light sensitive. Air sensitive.

Storage class (TRGS 510): 13: Flammable solid hazardous materials.

## Section 8: Exposure controls / personal protection

### 8.1 Control parameters

#### Components with workplace control parameters

Contains no substance with occupational exposure limit values.

### 8.2 Exposure controls

#### Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Ensure that eyewash stations and safety showers are close to the workstation location. Wash hands before breaks and at the end of workday.

### 8.3 Individual protection measures, such as personal protective equipment (PPE)

#### Eye/face protection

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

**Skin protection**

For full or incidental contact, nitrile gloves with a minimum layer thickness of 0.11 mm are recommended.

**Body protection**

Impervious clothing. Flame retardant antistatic protective clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Respiratory protection**

When a risk assessment indicates respiratory protection is required, use a full-face respirator with multi-purpose combination N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

**Section 9: Physical and chemical properties****9.1 Information on basic physical and chemical properties**

Appearance:	Form: solid
Odor:	No data available
Odor threshold:	No data available
pH:	No data available
Melting/freezing point:	No data available
Initial boiling point and range:	No data available
Flash point:	No data available
Evaporation rate:	No data available
Flammability (solid, gas):	The substance or mixture is a flammable solid with the category 1
Upper/lower flammability or explosive limits:	No data available
Vapor pressure:	No data available
Vapor density:	No data available
Relative density:	No data available
Solubility:	No data available
Partition coefficient, n-octanol/water:	No data available
Auto-ignition temperature:	No data available
Decomposition temperature:	No data available
Viscosity:	No data available
Explosive Properties:	Not classified as an explosive
Oxidizing properties:	No data available

**Section 10: Stability and reactivity****10.1 Reactivity**

No data available

**10.1 Chemical stability**

Stable under proper storage conditions

**10.3 Possibility of hazardous reactions**

No data available

**10.4 Conditions to avoid**

Heat, flames, and sparks.

**10.5 Incompatible materials**

Oxidizing agents.

**10.6 Hazardous decomposition products.**

Carbon oxides, Hydrogen chloride gas, Phosphorus oxides, Ruthenium oxide.

**Section 11: Toxicological information****11.1 Information on toxicological effects****Acute toxicity**

No data available

**Skin corrosion/irritation**

No data available

**Serious eye damage/eye irritation**

No data available

**Respiratory or skin sensitization**

No data available

**Germ cell mutagenicity**

No data available

**Carcinogenicity**

IARC: No data available

ACGIH: No data available

NTP: No data available

OSHA: No data available

**Reproductive toxicity**

No data available

**Specific target organ toxicity - single exposure**

No data available

**Specific target organ toxicity - repeated exposure**

No data available

**Aspiration hazard**

No data available

## 11.2 Additional Information

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated

### Components

#### Tricyclohexylphosphine

**Acute toxicity**

No data available

**Skin corrosion/irritation**

No data available

**Serious eye damage/irritation**

No data available

**Respiratory or skin sensitization**

No data available

**Germ cell mutagenicity**

No data available

**Carcinogenicity**

No data available

**Reproductive toxicity**

No data available

**Specific target organ toxicity – single exposure**

Inhalation: May cause respiratory irritation.

**Specific target organ toxicity – repeated exposure**

No data available

**Aspiration hazard**

No data available

## Section 12: Ecological information

### 12.1 Toxicity

No data available

### 12.2 Persistence and degradability

No data available

### 12.3 Bioaccumulation potential

No data available

### 12.4 Mobility in soil

No data available

**12.6 Other adverse effects**

No data available

**Section 13: Disposal considerations****13.1 Waste disposal methods**

Must not be disposed in household garbage or in sewer. Dispose of excess product in appropriate containers with a licensed disposal company in accordance with all relevant regulations. Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable.

**13.2 Contaminated packaging**

Contaminated packaging should be discarded in the same manner as excess product.

**Section 14: Transport information****DOT (US)**

UN number: 1325                      Class: 4.1                      Packing group: II  
Proper shipping name: Flammable solids, organic, n.o.s. (Dichloro(3-methyl-2-butenylidene)bis(tricyclohexylphosphine)ruthenium(II))  
Reportable Quantity (RQ):  
Poison Inhalation Hazard: No

**IMDG**

UN number: 1325                      Class: 4.1                      Packing group: II                      EMS-No: F-A, S-G  
Proper shipping name: Flammable solids, organic, n.o.s. (Dichloro(3-methyl-2-butenylidene)bis(tricyclohexylphosphine)ruthenium(II))

**IATA**

UN number: 1325                      Class: 4.1                      Packing group: II  
Proper shipping name: Flammable solids, organic, n.o.s. (Dichloro(3-methyl-2-butenylidene)bis(tricyclohexylphosphine)ruthenium(II))

**Section 15: Regulatory information****15.1 Safety, health, and environmental regulations/legislation specific for the substance or mixture****Massachusetts Right To Know components**

No components are subject to the Massachusetts Right to Know Act.

**Pennsylvania Right To Know components**

(Dichloro(3-methyl-2-butenylidene)bis(tricyclohexylphosphine)ruthenium(II))                      CAS-No.  
194659-03-5

**California Prop. 65 components**

This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.

## Section 16: Other information

### 16.1 Disclaimer

This information supplied in this document is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship. Users should make their own investigation to determine the suitability of this information for their particular purposes.