



Super Conductor Materials, Inc.

391 Spook Rock Industrial Park, Suffern, NY 10901 · 845.368.0240 · Fax 845.368.0250 · www.scm-inc.com

Chemtrec: (800) 424-9300
Poison Center: (800) 562-8236
Revision Date: January 8th, 2019

SAFETY DATA SHEET

Identity: Ruthenium

Formula: Ru

SECTION I - GENERAL INFORMATION

Manufacturer: Super Conductor Materials, Inc.

The information below is believed to be accurate and represents the best information available to Super Conductor Materials, Inc. However, SCM makes no warranty, expressed or implied with respect to such information and assumes no liability resulting from its use.

SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Molecular weight: 101.07

CAS #	OSHA PEL	ACGIH TLV	%
7440-18-8	NE	NE	0.0-100.0%

SECTION III – PHYSICAL/CHEMICAL CHARACTERISTICS

Physical States: Solid

Boiling Point: 4150.00°C

Vapor Pressure (vs. air or mmHg): 9.8mmHg

Melting Point: 2334.00.0°C

Density: 12.45g/cm³

Evaporation Rate: N/A

Flash Point: N/A

Solubility in water: Insoluble

Appearance and odor: Grey, white, silver powder and pieces, odorless

SECTION IV - FIRE AND EXPLOSION HAZARD DATA:

Method Used: Unknown

Explosive Limits: LEL: N/A

UEL: N/A

Extinguishing Media: CO₂, Foam and Dry Chemical. Do NOT use water

Special Fire Fighting Procedures:

Firefighters must wear full face, self-contained breathing apparatus with full protective clothing to prevent contact with skin and eyes. Fumes from fire are hazardous. Isolate runoff to prevent environmental pollution.

Unusual Fire and Explosion Hazards:

Flammable in the form of dust when exposed to flame.

When heated to decomposition, ruthenium metal may emit toxic fumes of ruthenium and its oxides.

May have a violent reaction with ruthenium oxide.

When heated above 1000F it may emit toxic fumes of ruthenium tetroxide, contact of ruthenium tetroxide with organic substances may cause an explosion.

May have an explosive reaction with regia + potassium chlorate.



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SECTION V - REACTIVITY DATA

Stability: Stable

Conditions to Avoid (stability): Extreme Heat

Incompatibility: Aqua regia, potassium chlorate and strong oxidizing agents

Hazardous Decomposition or Byproducts: Ruthenium and oxides of ruthenium

Hazardous Polymerization: Will not occur

Conditions to avoid (hazardous polymerization): None

SECTION VI - HEALTH HAZARD DATA

Route of entry: Inhalation? Yes Ingestion? Yes Skin? Yes Eyes? Yes Other? Yes

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

Most ruthenium compounds are poisons or moderately toxic. They resemble osmium compounds in that when heated in air, they evolve fumes which are injurious to the eyes and lungs and can produce nasal ulcerations. (Sax, Dangerous Properties of Industrial Materials, eighth edition)

Signs and Symptoms of Overexposure:

Inhalation: May cause a red, dry throat and coughing.

Ingestion: No acute or chronic health effects recorded.

Skin: May cause redness, burning, and itching.

Eye: May cause redness, burning, itching and watering.

Health Hazards (Acute and Chronic):

Inhalation:

Acute: May cause irritation to the upper respiratory system.

Chronic: No chronic health effects recorded.

Ingestion:

Acute: No acute health effects recorded.

Chronic: No chronic health effects recorded.

Skin:

Acute: Prolonged or repeated contact may cause irritation.

Chronic: No chronic health effects recorded.

Eye:

Acute: Prolonged or repeated contact may cause irritation.

Chronic: No chronic health effects recorded.

Target Organs: No target organs recorded

Carcinogenicity: NTP? No

IARC Monographs? No

OSHA Regulated? No

Medical Conditions Aggravated by Exposure: Pre-existing respiratory problems and/or allergies



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Emergency and First Aid Procedures:

- Inhalation:* Remove victim to fresh air, keep warm and quiet, and give oxygen if breathing is difficult; seek medical attention
- Ingestion:* Give 1-2 glasses of milk or water and induce vomiting, seek medical attention. Never induce vomiting or give anything by mouth to an unconscious person
- Skin:* Remove contaminated clothing, brush material off skin, wash affected area with mild soap and water, and seek medical attention if symptoms persist
- Eye:* Flush eyes with lukewarm water, lifting upper and lower eyelids for at least 15 minutes and seek medical attention

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be taken in case material is released or spilled:

Wear appropriate respiratory and protective equipment specified in section VIII. Isolate spill area, provide ventilation and extinguish sources of ignition. Vacuum up spill using a high efficiency particulate absolute (HEPA) air filter and place in a closed container for proper disposal. Take care not to raise dust.

Waste disposal method:

Call and/or ship to precious metal refiner

Hazard Label Information:

Store in cool, dry area and in tightly sealed container. Wash thoroughly after handling.

SECTION VIII - CONTROL MEASURES

Protective Equipment Summary (Hazard Label Information):

NIOSH approved respirator, impervious rubber gloves, safety glasses, clothes to prevent contact.

Ventilation:

Local Exhaust: To maintain concentration at low exposure levels.

Mechanical (General): Recommended.

Work/Hygienic/Maintenance Practices:

Implement engineering and work practice controls to reduce and maintain concentration of exposure at low levels. Use good housekeeping and sanitation practices. Do not use tobacco or food in work area. Wash thoroughly before eating or smoking. Do not blow dust off clothing or skin with compressed air.

Please be advised that N/A can either mean Not Applicable or No Data Has Been Established