SPI Supplies Division
Structure Probe, Inc.
206 Garfield Ave., West Chester, PA 19380-4512 USA
Phone: 1-(610)-436-5400 **Fax:** 1-(610)-436-5755
sales@2spi.com
http://www.2spi.com
Manufacturer's CAGE: 1P573

Safety Data Sheet

Date Effective: April 16, 2018

SPI Catalog # 02603-AB

SPI-Chem™ Ruthenium Red tetrahydrate

Section 1.1: Identification

Chemical Name/Synonyms ..... Ruthenium Red tetrahydrate

Product or Trade Name ..... SPI-Chem™ Ruthenium Red tetrahydrate

CAS #'s 12790-48-6

Chemical Formula..... $H_{42}Cl_6N_{14}O_2Ru_3 \cdot 4H_2O$

Molecular Weight: 858.41

Section 1.2: Relevant Uses/Restrictions

Laboratory chemical for use in staining reagents in histology.

Section 1.3: Supplier of the Safety Data Sheet

SPI Supplies Division
Structure Probe, Inc.
206 Garfield Ave., West Chester, PA 19380-4512 USA
Phone: 1-(610)-436-5400 **Fax:** 1-(610)-436-5755
sales@2spi.com
http://www.2spi.com
Manufacturer's CAGE: 1P573

Section 1.4: Emergency telephone number

Emergencies
Contacting CHEMTREC:

24 Hour Emergency Use Only #'s...
Worldwide phone: 1-(703)-741-5970
Toll-free phone: 1-(800)-424-9300 USA + Canada only

Section 2: Hazard Identification

2.1 Classification of the substance

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Serious eye damage / eye irritation (category 3)

Skin corrosion / Irritation (category 3)
Acute toxicity, inhalation (category 5)
Acute toxicity, dermal (category 5)
Acute toxicity, oral (category 4)

2.2 Label elements

Pictogram

Signal Word: Warning

Hazard statements:

H320: Causes eye irritation.
H316: Causes mild skin irritation.
H333: May be harmful if inhaled.
H313: May be harmful in contact with skin.
H302: Harmful if swallowed.

Precautionary statements:

P201: Obtain instructions before use
P280: Wear protective gloves/ protective clothing/ eye protection / face protection.
P308 + P313: If exposed or concerned: Get medical advice / attention.

2.3 Other Hazards:

Hazardous Material Information System USA

Health 1
Fire Hazard 1
Reactivity 0
Personal Protection .....

NFPA Rating (estimated)

Health 1
Flammability..... 1
Reactivity 0

Section 3: Composition

3.1 Substances:

Ruthenium Red	91.5 weight percent
Water	8.4 weight percent

Section 4: First Aid Measures

4.1 Description of first aid measures:

Inhalation:

Remove the victim from the contaminated area while protecting yourself from exposure by wearing an appropriate respirator. Put a similar respirator on the victim if possible. Get immediate medical attention.

Skin Contact:

Flush area for 15 minutes with water and wash with soap and water. If discomfort occurs or persists, contact a physician. Remove contaminated clothing and shoes and was before reuse.

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses if present and easy to do. Get immediate medical attention.

Ingestion:

Rinse mouth. Seek immediate medical attention. Clear the airway and administer artificial respiration if not breathing.

If swallowed: do not induce vomiting unless directed to do so by medical personnel.

Self-protection of the first aider: Use organic vapor respirator if airborne levels are not maintained or if ventilation is inadequate.

4.2 Most important symptoms and effects, both acute and delayed:

No additional information available.

4.3 Indication of any immediate medical attention and special treatment needed:

No additional information available.

Section 5: Fire Fighting Measures

5.1 Extinguishing media:

In case of fire, use water fog, dry chemical, CO_2, or "alcohol resistant" foam.

5.2 Special hazards arising from the substance or mixture:

Constituents associated with burning / combustion are to be considered toxic.

Hazardous combustion products:

Can decompose to emit toxic ammonia and chlorine vapors.

5.3 Advice for firefighters:

Special protective equipment and precautions for firefighters: Use proper safety equipment. Fire-fighters should wear self-contained breathing apparatus and full protective gear.

Section 6: Accidental Release Measures

6.1 Personal precautions:

Keep unnecessary personnel away.
Keep people away from and upwind of spill / leak.
Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area).
Wear appropriate respiratory protective equipment and clothing during clean-up.
Avoid breathing dust.
Ventilate area if easy to do so.
Contact local authorities if significant spillages cannot be contained.
For personal protection, see Section 8.

6.2 Environmental precautions:

Do not let product enter drains.

6.3 Methods and material for containment and cleaning up:

Large spills: Contain actively spilling material if safe and easy to do so. Do not let product enter drains.

Small spills: Wet brush and collect to waste receptacles.

Clean-up procedure: 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.

6.4 Reference to other sections:

For personal protection, see Section 8.

Section 7: Handling and Storage

7.1 Precautions for safe handling:

Protective measures:

Do not handle until all safety precautions have been read and understood.
Keep containers tightly closed.
Ensure adequate ventilation.
Avoid breathing dust.
Avoid contact with eyes, skin, and clothing.
Avoid prolonged exposure.
Wear appropriate personal protective equipment.
Wash thoroughly after handling.
Keep away from ignition sources.

7.2 Conditions for safe storage, including any incompatibilities:

Store in cool, dry area in a tightly closed product container away from sources of ignition or flame.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Store away from strong acids or oxidizing agents. Refer to Section 10.

7.3 Specific end uses:

Laboratory chemical for use in staining reagents in histology.
This material is not being offered for clinical or diagnostic applications, agricultural uses or for human or animal consumption.

Section 8: Exposure Controls and Personal Protection

8.1 Control parameter and Personal Protection:

Workplace exposure limits: Contains no components with workplace exposure limits.

Biological limit values: No data available.

8.2 Exposure controls:

8.2.1 Appropriate engineering controls:

General good industrial hygiene practice.
Local exhaust ventilation required in handling area.

8.2.2 Individual protection measures:

Work clothing: Protective work clothing which covers skin and prevents exposures.
Eye/face protection: Wear safety glasses with side shields or goggles or face shield.
Skin protection: Wear chemical resistant gloves.
Respiratory protection: Utilize organic vapor respirator if airborne levels are not maintained or if ventilation is inadequate. Where risk assessment shows air-purifying respirators are appropriate, use a full-

face respirator with multi-purpose (US) or type ABEK (EN 14387) 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 an approved under appropriate government standards such as NIOSH (US) OR CEN (EU).

8.2.3 Environmental exposure controls:

Additional information: Observe good chemical hygiene practices.
Do not smoke or eat while using this product.
Wash hands or exposed skin after using this product.

Section 9: Physical and Chemical Properties

9.1 Information on basic physical and chemical properties:

Appearance: Dark brown, solid, powder

Odor: Ammonial

Odor threshold: No data available

pH: No data available

Melting point/Freezing point: No data available

Boiling point/Boiling point range: No data available

Flash Point: No data available

Evaporation rate: No data available

Flammability (solid, gas): No data available

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: Soluble in water

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: No data available

Oxidizing Properties: No data available

9.2 Other information:

No additional information available.

Section 10: Stability and Reactivity

10.1 Reactivity: No data available.

10.2 Chemical Stability: This product is stable and non-reactive under normal conditions of use.

10.3 Possibility of Hazardous Reactions: Product is not subject to hazardous polymerization.

10.4 Conditions to avoid: Avoid open flame and ignition sources.

10.5 Incompatible materials: Strong oxidizing agents.

10.6 Hazardous decomposition products: Ammonia and Chlorine vapor.

Section 11: Toxicological Information

Information on the likely routes of exposure

11.1 Information on toxicological effects

A. Acute toxicity:

Inhalation: No data available.

Dermal: No data available.

B. Skin corrosion/irritation:

No data available.

C. Serious eye damage/irritation:

No data available.

D. Respiratory or skin sensitization:

No data available.

E. Germ cell mutagenicity:

No data available.

F. Carcinogenicity:

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by IARC.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

G. Reproductive toxicity:

No data available.

H. STOT-single exposure:

No data available.

I.. STOT-repeated exposure:

No data available.

J. Aspiration hazard:

No data available.

Additional information:

RTECS: Not available.

Section 12: Ecological Information

12.1 Toxicity: No data available.

12.2 Persistence and degradability: No data available.

12.3 Bio-accumulative potential: No data available.

12.4 Mobility in soil: No data available.

12.5 Results of PBT and vPvB assessment: Not available as chemical safety assessment not required/ not conducted.

12.6 Other adverse effects: No data available.

Section 13: Disposal Considerations

13.1 Waste treatment methods:

Product disposal: Place in a sealed container. Consult federal, state, and local regulations for proper disposal/ recycle/ reclamation.

Container disposal: Treat empty containers with extra care. Consult waste contractor.

Other considerations: No further information available.

Section 14: Transport Information

DOT: Not dangerous goods.

IATA: Not dangerous goods.

IMDG: Not dangerous goods.

Section 15: Regulatory Information

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

US Regulations:

TSCA: Not listed.

SARA 313: Not listed.

Other Countries:

CANADA DSL: Not listed.

European Union (EU): R36/37/38: Irritating to eyes, respiratory system, and skin.
S24/25: Avoid contact with skin and eyes.

15.2 Chemical Safety Assessment: Has not been conducted.

Date of Production: 16 April 2018.
Corrections/Additions: Section 1, Molecular Formula, Molecular Weight.

Abbreviations and acronyms
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
CMRG: Chemical Manufacturer's Recommended Guidelines
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
AIHA: American Industrial Hygiene Association
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bio-accumulative and Toxicological
vPvB: very Persistent and very Bio-accumulative
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety Health
ATE: Acute Toxicity Estimates
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
STEL: Short Term Exposure Limit
CEIL: Ceiling

Section 16: Other Information

Disclaimer of Liability:

Caution! Do not use SPI Supplies products or materials in applications involving implantation within the body; direct or indirect contact with the blood pathway; contact with bone, tissue, tissue fluid, or blood; or prolonged contact with mucous membranes. Products offered by SPI Supplies are not designed or manufactured for use in implantation in the human body or in contact with internal body fluids or tissues. SPI Supplies will not provide to customers making devices for such applications any notice, certification, or information necessary for such medical device use required by US FDA (Food and Drug Administration) regulation or any other statute. SPI Supplies and Structure Probe, Inc. make no representation, promise, express warranty or implied warranty concerning the suitability of these materials for use in implantation in the human body or in contact with internal body tissues of fluids.

The information and recommendations set forth above are taken from sources believed to be accurate as of the date hereof, however SPI Supplies and Structure Probe, Inc. make no warranty with respect to the accuracy of the information or the suitability of the recommendations, and assume no liability to any user thereof. The information contained in this sheet does not constitute a hazard assessment and should not be used in place of the user's own assessment of work place risks as required by other health and safety legislation. Be aware of the Structure Probe, Inc. Copyright Policy. Structure Probe, Inc. grants a nonexclusive license to make unlimited copies of this safety sheet for internal use only. Quite obviously, this information would pertain only to this material when purchased from SPI Supplies as product from other sources, with other ingredients and impurity levels could have substantially different properties.