

GELEST, INC.

11 East Steel Rd. Morrisville, PA 19067
Phone: (215) 547-1015

MATERIAL SAFETY
DATA SHEET

EMERGENCY TELEPHONE
CHEMTREC: 1-800-424-9300

NAME ON LABEL: **PHENANTHROLINE RUTHENIUM CHLORIDE, hydrate - OMRU026**
CHEMICAL NAME: PHENANTHROLINE RUTHENIUM CHLORIDE, hydrate
SYNONYMS: RUTHENOUS TRIS(1,10-PHENANTHROLINE) DICHLORIDE, hydrate
CHEMICAL FAMILY: RUTHENIUM COMPOUND
FORMULA: $C_{26}H_{24}N_6Cl_2Ru$
HMIS CODES HEALTH: 3 FLAMMABILITY: 1 REACTIVITY: 0

INGREDIENTS

| IDENTITY | CAS NO. | % | TLV |
|--|-------------|-----|-----------------|
| PHENANTHROLINE RUTHENIUM CHLORIDE, hydrate | 304695-79-2 | >95 | not established |
| CAS# for anhydrous compound: [23570-43-6] | | | |

PHYSICAL DATA

| | |
|--|---------------------------------------|
| Boiling Point: NA | Melting Point: >200°C |
| Specific Gravity: >1 | Vapor Pressure: not determined |
| Vapor Density: NA | Solubility in water: slightly soluble |
| % volatiles: <1 | Evaporation rate: NA |
| Molecular Weight: 712.61/730.61 | Other: NA |
| Appearance & Color: Orange-red powder. | |

FIRE & EXPLOSION DATA

Flash Point, COC: >110°C (>230°F) Autoignition Temp.: not determined
Flammability Limits- LEL: NA UEL: NA

Extinguishing Media: Water spray, foam, carbon dioxide, dry chemical.
Special Fire Fighting Procedures: Avoid eye and skin contact. Do not breathe fumes or inhale vapors.
Unusual Fire and Explosion Hazards: Irritating fumes and organic acid vapors may develop when material is exposed to elevated temperatures or open flame.

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ENVIRONMENTAL INFORMATION

Spill response: Sweep material and transfer to a suitable container for disposal.

Recommended Disposal: Dispose of as solid waste. In moderate quantities ruthenium recovery should be considered. Follow all chemical pollution control regulations.

HEALTH HAZARD DATA

Eye Contact: May cause immediate or delayed severe eye irritation.

Skin contact: May produce irritation or contact dermatitis. Prompt and thorough washing with soap and water will reduce or eliminate potential dermal effects.

Inhalation: Inhalation of dust or particulates may irritate the respiratory tract.

Oral Toxicity: not determined
Chronic Toxicity: not determined

SUGGESTED FIRST AID

EYES: In case of contact, immediately flush eyes with flowing water for at least 15 minutes. Get medical attention.

SKIN: Flush with water, then wash with soap and water.

INHALATION: Move exposed individual to fresh air. Administer oxygen if needed. Call a physician.

INGESTION: Never give fluids or induce vomiting if patient is unconscious or having convulsions. Get medical attention.

REACTIVITY DATA

Stability: Stable

Conditions to avoid: Material decomposes slowly in contact with air by reaction with water and carbon dioxide.

Hazardous decomposition products: Organic acid vapors and ruthenium oxide fumes.

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SPECIAL PROTECTION INFORMATION

Ventilation: Local exhaust is required. Mechanical is recommended.

Respiratory Protection: If exposure exceeds TLV, NIOSH approved dust and mist respirator.

Eye and Face Protection: Chemical worker's goggles. Do not wear contact lenses.

Other Clothing and Equipment: Rubber, neoprene or nitrile gloves. An eyewash and emergency shower should be available. Launder clothing before reuse.

OTHER PRECAUTIONS

For research use only.

Storage and Handling: Store in sealed containers away from light.

TRANSPORTATION

DOT SHIPPING NAME: CHEMICALS, NOI

DOT HAZARD CLASS: None required

DOT LABEL: None required

DOT ID No: None required

Prepared by safety and environmental affairs

ISSUE DATE OMRU026: 5/20/11

SUPERSEDES: none

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