


MATERIAL SAFETY DATA SHEET

Ruthenium (III) Chloride Hydrate

NFPA 	HMIS <table border="1"><tr><td>HEALTH</td><td>3</td></tr><tr><td>FLAMMABILITY</td><td>0</td></tr><tr><td>REACTIVITY</td><td>0</td></tr><tr><td>PERSONAL PROTECTION</td><td>J</td></tr></table>	HEALTH	3	FLAMMABILITY	0	REACTIVITY	0	PERSONAL PROTECTION	J
HEALTH	3								
FLAMMABILITY	0								
REACTIVITY	0								
PERSONAL PROTECTION	J								

1. Product And Company Identification

Supplier Colonial Metals, Inc. Building 20 505 Blue Ball Road Elkton, MD 21921 United States Company Contact: Joseph Fittos III Telephone Number: 410-398-7200 FAX Number: 410-398-2918 E-Mail: jfittos@colonialmetals.com Web Site: colonialmetals.com	Manufacturer Colonial Metals, Inc. Building 20 505 Blue Ball Road Elkton, MD 21921 United States Company Contact: Joseph Fittos III Telephone Number: 410-398-7200 FAX Number: 410-398-2918 E-Mail: jfittos@colonialmetals.com Web Site: colonialmetals.com
Supplier Emergency Contacts & Phone Number Chemtrac: 800-424-9300 World Wide - Call COLLECT to U.S: 703-527-3887	Manufacturer Emergency Contacts & Phone Number Chemtrac: 800-424-9300 World Wide - Call COLLECT to U.S: 703-527-3887

Issue Date: 08/22/2007

Product Name: Ruthenium (III) Chloride Hydrate

CAS Number: 14898-67-0

Chemical Family: Metal halide

Chemical Formula: RuCl₃.xH₂O

MSDS Number: 8002

Product Code: 8002

Synonyms

Ruthenium trichloride

2. Composition/Information On Ingredients

Ingredient Name	CAS Number	Percent Of Total Weight
Ruthenium (III) Chloride Hydrate	14898-67-0	99.9 - 100

EMERGENCY OVERVIEW

Corrosive to skin and eyes. Material has a strong odor of chlorine. Inhalation will lead to burning of the respiratory tract.

MATERIAL SAFETY DATA SHEET

Ruthenium (III) Chloride Hydrate

Hazards Identification (Pictograms)



3. Hazards Identification

Primary Route(s) Of Entry

Eye: Likely
Inhalation: Likely
Skin: Likely
Ingestion: Likely

Eye Hazards

May cause mild to severe irritation to the eyes. Corrosive to the eyes.

Skin Hazards

Causes burns to the skin.

Ingestion Hazards

No information is available on the the physiological effects of ingestion.

Inhalation Hazards

The material has strong chlorine odor. Inhalation will lead to burning of the respiratory tract.

Conditions Aggravated By Exposure

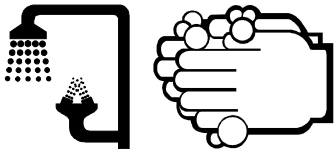
May cause irritation of the respiratory system. Maintain housekeeping and personal hygiene to minimize exposure and prevent sensitization.

Conditions Aggravated By Overexposure

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

To the best of our knowledge the chemical, physical, and toxicological effects of this compound have not been thoroughly investigated.

First Aid (Pictograms)



4. First Aid Measures

Eye

Flush for 15 minutes with plenty of water. If discomfort occurs or persists, contact a physician.

Skin

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 wash before reuse.

Ingestion

Seek medical attention immediately. Keep victim calm. Give the victim water (only if conscious). Induce vomiting only if directed by medical personnel.

MATERIAL SAFETY DATA SHEET

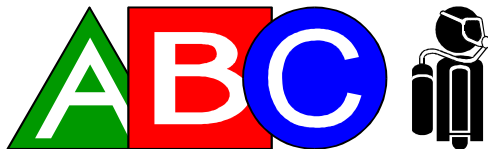
Ruthenium (III) Chloride Hydrate

4. First Aid Measures - Continued

Inhalation

Remove the victim to fresh air. Closely monitor the victim for signs of respiratory problems, such as difficulty in breathing, coughing, wheezing, or pain. In such cases seek immediate medical attention.

Fire Fighting (Pictograms)



5. Fire Fighting Measures

Flash Point: NA °F NA °C

Flash Point Method: NA

Autoignition Point: NA °F NA °C

Flammability Class: NA

Lower Explosive Limit: NA

Upper Explosive Limit: NA

Fire And Explosion Hazards

No unusual fire or explosion hazards.

Extinguishing Media

Dry chemical

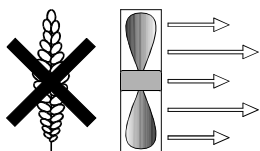
Fire Fighting Instructions

Use NIOSH/ANSI approved self-contained breathing apparatus and full protective clothing.

6. Accidental Release Measures

Small spills can be mixed with vermiculite or sodium carbonate and swept up.

Handling & Storage (Pictograms)



7. Handling And Storage

Handling And Storage Precautions

Store material in a tightly sealed bottle. If possible, handle material in an efficient fume hood.

Handling Precautions

Do not get into eyes, on skin, on clothing.

Storage Precautions

Keep tightly closed container. Store in a dry cool place.

Work/Hygienic Practices

Wash thoroughly with soap and water after handling. Wash thoroughly after handling. Use good personal hygiene.

MATERIAL SAFETY DATA SHEET

Ruthenium (III) Chloride Hydrate

Protective Clothing (Pictograms)



8. Exposure Controls/Personal Protection

Engineering Controls

Ventilation: Local Exhaust: Required in handling area
Mechanical: Desirable to insure concentration of material below TLV/TWA concentrations.
Other: Closed Ventilation system - Dust (Laboratory Fume hood)

Safety shower and eyewash

Eye/Face Protection

ANSI approved safety glasses/goggles

Skin Protection

Rubber/Neoprene (use compatible chemical-resistant gloves).

Respiratory Protection

NIOSH approved chemical cartridge respiratory for particulates and acid gas or self-contained breathing apparatus with full face shield.

9. Physical And Chemical Properties

Appearance

black powder

Odor

may have a strong chlorine odor.

Odor Threshold

none.

Chemical Type: Mixture

Physical State: Solid

Melting Point: NA °F NA °C

Boiling Point: Decomposes °F Decomposes °C

Specific Gravity: 3.11 g/cm³

Molecular Weight: 207.43 (anhydrous)

Percent Volatiles: NA

Percent VOCs: NA

Packing Density: NA

Vapor Pressure: NA

Vapor Density: NA

pH Factor: NA At a Concentration Of NA

Solubility: Soluble in water

Viscosity: NA

Evaporation Rate: NA

MATERIAL SAFETY DATA SHEET

Ruthenium (III) Chloride Hydrate

10. Stability And Reactivity

Stability: Hygroscopic

Hazardous Polymerization: none

Conditions To Avoid (Stability)

Material may absorb water from the atmosphere on prolonged exposure.

Incompatible Materials

Strong reducing agents.

Hazardous Decomposition Products

Hydrogen chloride and chlorine.

Conditions To Avoid (Polymerization)

None.

11. Toxicological Information

Miscellaneous Toxicological Information

To the best of our knowledge the chemical, physical, and toxicological effects of this compound have not been thoroughly investigated.

12. Ecological Information

No Data Available...

13. Disposal Considerations

Consult Federal EPA, State and local regulations for proper disposal/recycle/reclamation

NOTE: Chemical additions, processing, or otherwise altering this material may make the waste management information presented above incomplete, inaccurate, or otherwise inappropriate.

14. Transport Information

Proper Shipping Name

Corrosive solid, acidic, inorganic, n.o.s.

Hazard Class

8

Secondary Hazard Class

PG II

DOT Identification Number

UN1759

DOT Shipping Label

Corrosive solid, acidic, inorganic, n.o.s.

Freight Class

see 40 CFR

Packaging Exceptions

See 40 CFR

Packaging Requirements

See 40 CFR

Additional Shipping Paper Description

IATA:

Proper Shipping Name: Corrosive solid, acidic, inorganic, n.o.s.

MATERIAL SAFETY DATA SHEET

Ruthenium (III) Chloride Hydrate

14. Transport Information - Continued

Additional Shipping Paper Description - Continued

IATA UN#: 3260

Hazard Class: 8

Packaging Group: II

DOT (Pictograms)



ADR - Europe (Pictograms)



TDG - Canada (Pictograms)



15. Regulatory Information

U.S. Regulatory Information

Listed in the TSCA inventory as RuCl_3 (CAS# 10049-08-8).

Canadian Regulatory Information

This product has been classified in accordance with the hazard criteria of CPR, and the MSDS contains all the information required by the CPR.

European Union (EU) Regulatory Information

Symbol of Danger: C

Indication of Danger: Corrosive

R: 34

Risk Phrase: Causes burns.

S: 26 36/37/39 45

Safety Phrase: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing, gloves, and eye/face protection. In case of accident or if you feel unwell, seek medical advice immediately. (show the label where possible)

Other International Regulations

US Classification and Label Text

Indication of Danger: Corrosive

Risk Phrase: Causes burns.

Safety Phrase: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear

MATERIAL SAFETY DATA SHEET

Ruthenium (III) Chloride Hydrate

15. Regulatory Information - Continued

Other International Regulations - Continued

suitable protective clothing, gloves, and eye/face protection. In case of accident or if you feel unwell, seek medical advice immediately. (show the label where possible)

WHMIS - Canada (Pictograms)



16. Other Information

NFPA Rating

Health: 3

Fire: 0

Reactivity: 0

Other: COR

HMIS Rating

Health: 3

Fire: 0

Reactivity: 0

Personal Protection: J

Revision/Preparer Information

MSDS Preparer: Joseph J. Fittos III

MSDS Preparer Phone Number: (410)398-7200

Disclaimer

In compliance with the OSHA Hazard Communication Standard, 29 C.F.R 1910.1200, we are providing you with a Materials Safety Data Sheet (MSDS) for the hazardous material you are purchasing.

It is your responsibility to educate your employees on the safe use of the hazardous material. With this in mind, a copy should be forwarded to the supervisor of the user or to the user themselves, and copy should be retained in your files for future reference.

Colonial Metals, Inc. makes no presentation as to the accuracy of the information in the MSDS. The information is believed to be correct; however, you (the customer), should perform your own investigation and independent verification. If you resell the product, you are responsible to forward the information in the MSDS to your customer.

Colonial Metals, Inc.