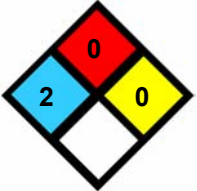




MATERIAL SAFETY DATA SHEET

Hexaammineruthenium (II) Chloride

<p>NFPA</p> 	<p>HMIS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="background-color: #00b0f0; color: white;">HEALTH</td> <td style="text-align: center;">2</td> </tr> <tr> <td style="background-color: #ff0000; color: white;">FLAMMABILITY</td> <td style="text-align: center;">0</td> </tr> <tr> <td style="background-color: #ffff00;">REACTIVITY</td> <td style="text-align: center;">0</td> </tr> <tr> <td>PERSONAL PROTECTION</td> <td style="text-align: center;">J</td> </tr> </table>	HEALTH	2	FLAMMABILITY	0	REACTIVITY	0	PERSONAL PROTECTION	J
HEALTH	2								
FLAMMABILITY	0								
REACTIVITY	0								
PERSONAL PROTECTION	J								

1. Product And Company Identification

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

Issue Date: 01/09/2006

Product Name: Hexaammineruthenium (II) Chloride
Chemical Name: Ruthenium hexaammine dichloride
CAS Number: 15305-72-3
Chemical Family: Precious metal salts
Chemical Formula: H18Cl2N6Ru
EPA Registry Number: NA
RCRA Number: NA
MSDS Number: 8013
Product Code: 8013

Synonyms
 Hexaammineruthenium(II)chloride, Hexaammineruthenium dichloride, Hexaammineruthenium(2+) dichlorid

2. Composition/Information On Ingredients

Ingredient Name	CAS Number	Percent Of Total Weight
Title Compound	15305-72-3	99

EMERGENCY OVERVIEW

Irritating to eyes, respiratory system and skin. Air sensitive.



MATERIAL SAFETY DATA SHEET

Hexaammineruthenium (II) Chloride

Hazards Identification (Pictograms)



3. Hazards Identification

Primary Routes(s) Of Entry

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

Eye Hazards

Causes eye irritation.

Skin Hazards

Causes skin irritation. May be harmful if absorbed through the skin.

Ingestion Hazards

May cause irritation of the digestive tract. May be harmful if swallowed.

Inhalation Hazards

Causes respiratory tract irritation. May be harmful if inhaled.

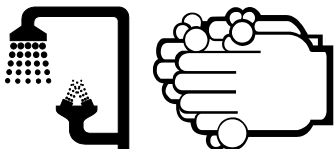
Subchronic (Target Organ Effects)

None

Chronic/Carcinogenicity Effects

None

First Aid (Pictograms)



4. First Aid Measures

Eye

Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids.
Get medical aid.



MATERIAL SAFETY DATA SHEET

Hexaammineruthenium (II) Chloride

4. First Aid Measures - Continued

Skin

Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

Ingestion

Get medical aid. Wash mouth out with water.

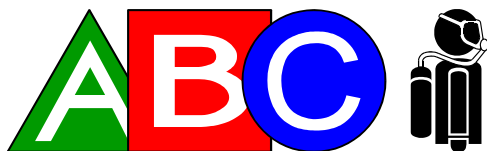
Inhalation

Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Note To Physician

Treat symptomatically and supportively.

Fire Fighting (Pictograms)



5. Fire Fighting Measures

Flash Point: NA °F NA °C

Flash Point Method: NA

Fire And Explosion Hazards

Use proper safety equipment. Can decompose to emit toxic, irritating fumes.

Extinguishing Media

Use CO2 (Carbon Dioxide), dry chemical, or foam.

Fire Fighting Instructions

As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

6. Accidental Release Measures

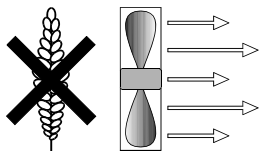
Use proper personal protective equipment as indicated in Section 8. **Spills/Leaks:** Vacuum or sweep up material and place into a suitable disposal container.



MATERIAL SAFETY DATA SHEET

Hexaammineruthenium (II) Chloride

Handling & Storage (Pictograms)



7. Handling And Storage

Handling And Storage Precautions

Avoid breathing dust, vapor, mist, or gas. Avoid contact with skin and eyes. **Storage:** Store in a tightly closed container. Store in a dry area. Keep refrigerated. (Store below 4°C/39°F.) Store under nitrogen.

Handling Precautions

Avoid breathing dust, vapor, mist, or gas. Avoid contact with skin and eyes.

Storage Precautions

Store in a tightly closed container. Store in a dry area. Keep refrigerated. (Store below 4°C/39°F.) Store under nitrogen.

Work/Hygienic Practices

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

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 levels
Other: Closed Ventilation System (Laboratory Fume Hood)

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.



MATERIAL SAFETY DATA SHEET

Hexaammineruthenium (II) Chloride

8. Exposure Controls/Personal Protection - Continued

Other/General Protection

Lab coat/apron, flame and chemical resistant protective clothing, eye wash, safety shower, and hygiene facilities for washing

9. Physical And Chemical Properties

Appearance

khaki - green - brown

Odor

None

Chemical Type: Mixture

Physical State: Solid

Molecular Weight: 274.16

Solubility: Soluble

10. Stability And Reactivity

Stability: May decompose on exposure to air

Hazardous Polymerization: Will not polymerize

Conditions To Avoid (Stability)

Incompatible materials, exposure to air.

Incompatible Materials

Strong oxidizing agents.

Hazardous Decomposition Products

Hydrogen chloride, nitrogen oxides (NO_x) and ammonia (NH₃).

Conditions To Avoid (Polymerization)

Will not occur.

11. Toxicological Information

Miscellaneous Toxicological Information

The toxicological properties have not been fully investigated.

12. Ecological Information

No Data Available...

13. Disposal Considerations

No Data Available...



MATERIAL SAFETY DATA SHEET

Hexaammineruthenium (II) Chloride

14. Transport Information

Proper Shipping Name

Non-Hazardous

Additional Shipping Paper Description

IATA: Same as DOT Regulation 49 CFR. Consult IATA regulation before shipping.

15. Regulatory Information

U.S. Regulatory Information

In the process of obtaining LVE. For research and development usage.

SARA Section 313 Notification

Does not require reporting under SARA Title 313.

Canadian Regulatory Information

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

European Union (EU) Regulatory Information

Hazard Symbols: XI

Risk Phrases:

R 36/37/38 Irritating to eyes, respiratory system and skin.

Safety Phrase:

S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S 37/39 Wear suitable gloves and eye/face protection.

Other International Regulations

WGK (Water Danger/Protection)

CAS # 15305-72-3:2

Canada

DSCL - Europe (Pictograms)



16. Other Information

NFPA Rating

Health: 2

Fire: 0

Reactivity: 0



MATERIAL SAFETY DATA SHEET

Hexaammineruthenium (II) Chloride

16. Other Information - Continued

NFPA Rating - Continued

HMIS Rating

Health: 2

Fire: 0

Reactivity: 0

Personal Protection: J

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.

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