

## Safety Data Sheet

### 29 CFR 1910.1200

#### Section 1: Company and Product Identification

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**Product Name:** Ruthenium Nitrosyl Nitrate Solution

**Product Code:** 8037-S

**Company:** Colonial Metals, Inc.  
 Building 20  
 505 Blue Ball Road  
 Elkton, MD 21921 United States  
 Company Contact: EHS Director  
 Telephone Number: 410-398-7200  
 FAX Number: 410-398-2918  
 E-Mail : info@colonialmetals.com  
 Web Site: www.colonialmetals.com



www.colonialmetals.com

**Emergency Response:** Supplier Emergency Contacts & Phone Number  
 Chemtrec: 800-424-9300  
 World Wide - Call COLLECT to U.S: 703-527-3887

#### Section 2: Hazards Identification

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GHS05

GHS06

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**Hazard Pictograms:**



**Signal Word:** Danger

**Hazard Category:** Serious eye damage/eye irritation Cat 1  
 Skin corrosion/irritation Cat 1  
 Acute tox, inh. Cat 1/2  
 Specific target organ tox, single exp. Cat 1  
 Acute tox, oral Cat 3

**Hazard Statements:** H318: Causes serious eye damage  
 H314: Causes severe skin burns and eye damage  
 H330: Fatal if inhaled  
 H370: Causes damage to organs  
 H301: Toxic if swallowed

**Precautionary Statements:** P301+310: IF SWALLOWED: Immediately call a POISON CENTER or  
 P337+313: If eye irritation persists get medical advice/attention  
 P308+313: IF exposed or concerned: Get medical advice/attention

**Hazards not otherwise classified:**

**Ingestion Hazards:**

Toxic if swallowed.

**Inhalation Hazards:**

Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract. May be fatal if inhaled.

**Conditions Aggravated By Exposure:**

May cause irritation of the respiratory system. Exposure to nitric acid causes tissue corrosion from topical contact and acute pulmonary edema or chronic obstructive pulmonary disease from inhalation.

**Target Organs:**

Teeth, Lungs, Cardiovascular System.

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

**Section 3: Composition / Information on Ingredients**

Hazardous substance (name)	Hazard Category	CAS#	Weight %
Nitric Acid	Corrosive/Toxic	7697-37-2	< 20
Ruthenium Nitrosyl Nitrate		34513-98-9	3 - 47
Water		7732-18-5	33 - 96
Ruthenium Nitrosyl Nitrate Solution % of Total weight is based upon the RU Metal content			

**Section 4: First Aid Measures**

**General Info:** Consult a Physician. Show this safety data sheet to the doctor in attendance.

**Notable Exposure symptoms:** Irritation to skin, eyes and areas of contact.

**symptoms:**

**If ingested:** 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.

**If inhaled:** 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 medical attention immediately.

**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.

**Skin contact:** Flush area for 15 minutes with water and wash with soap and water. Contact a physician immediately. Remove contaminated clothing and shoes and wash before reuse.

**Section 5: Fire Fighting Measures**

**General Info:** Use NIOSH/MSHA approved self-contained breathing apparatus and full protective clothing. Do not direct a solid stream of water or foam into burning molten material; this may cause spattering and spread the fire.

**Extinguishing Method / Equipment:** Use extinguishing media appropriate for surrounding fire conditions. Quench with large quantities of water. Use water spray to cool fire exposed containers.

**Hazardous:** At elevated temperature, can emit toxic fumes of ruthenium tetroxide and oxides of nitrogen.

**Decomposition Info:** Violent reaction with fuels. May ignite combustibles Powerful oxidizer. Contact with metal may liberate hydrogen gas. May accelerate combustion.

**Section 6: Accidental Release Measures**

**Personal precautions, protective equipment and procedures:** 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 of the SDS.

**Containment Equipment and Procedures:** Large Spills: Contain actively spilling material if safe and easy to do so. Do not let product enter drains. Dike major spills. Neutralize with slaked lime or sodium bicarbonate solution, soak up and place in sealed container.

Small Spills: Sweep or soak up and place in sealed container. Taking care to avoid dusting.

**Cleanup Procedures:** 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.

**Section 7: Handling and Storage**

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

**Recommendations for Storage:** 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.

**Incompatibilities:** Store away from oxidizing agents. Refer to Section 10.

**Section 8: Exposure Control / Personal Protection**

**General / Ventilation:** Local Exhaust: Required in handling area

**Engineering Mechanical:** Desirable to insure concentration of material below TLV/TWA levels

**Controls:** Other: Closed Ventilation system - Dust (Laboratory Fume Hood)

**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** Utilize organic vapor respirator if airborne levels are not maintained or if ventilation is inadequate.

**Protection:** Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (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 and approved under appropriate government standards such as NIOSH (US) or CEN(EU).

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

Ingredient(s) - Exposure Limits**Nitric Acid**

NIOSH - 2 ppm (5 mg/m<sup>3</sup>) for 10 hr TWA. IDLH: 100 ppm

ACGIH: 2 ppm TWA or 5,2 mg/m<sup>3</sup> or STEL: 4 ppm or 10 mg/m<sup>3</sup>

**Section 9: Physical and Chemical Properties**

<b>State:</b> Liquid	<b>Melting Point:</b> N/A	<b>Freezing Point:</b> N/A
<b>Color:</b> Dark Red	<b>Boiling Point/Range:</b> 1100 °C	<b>pH</b> 1-2
<b>Molecular Wt.</b> 317.11	<b>Odor:</b> Acid Odor	<b>Water Solubility:</b> Miscible
<b>Specific Gravity:</b> 1.07 g/cm <sup>3</sup>	<b>Flash Point:</b> N/A	<b>Part. Coeff (n-octanol/water):</b> N/A
<b>Upper Flam Limits:</b> N/A	<b>Lower Flam Limits:</b> N/A	<b>Vapor Pressure:</b> N/A
<b>VOC Content (lbs/gal):</b> N/A	<b>Viscosity:</b> N/A	<b>Autoignition Temp:</b> N/A

**Section 10: Stability and Reactivity**

**General:** This product is stable and non-reactive under normal conditions of use. Product is not subject to hazardous polymerization. Avoid open flame and ignition sources.

**Stability:** Stable

**Conditions to Avoid:** May discolor on exposure to light

**Incompatible materials:** May react with metals releasing flammable hydrogen gas. Fluorine

**Decomposition products:** Nitrogen oxides.

**Section 11: Toxicological Information**

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

**Toxicological Information (product):** No data available

**Likely Routes of Exposure:** Eye Contact  
Skin Contact  
Inhalation  
Ingestion - possible, but considered unlikely.

**Toxicological Information (contained substances)**

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

**Sensitization:** Product is not expected to be a sensitizer.

**Other Notes:** Subchronic (Target Organ Effects)  
Teeth, lungs, cardiovascular system.

**Section 12: Ecological Information**

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**General information:** No data available

**Aquatic toxicity:** Nitric Acid - ILDH = 100 ppm

**Degradation / Mobility info:** No specific data available.

**Bioaccumulative potential:** No specific data available.

**Section 13: Disposal Information**

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**Product disposal:** Place in a sealed container. 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.

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

**Other considerations:** No further information.

**Section 14: Transport Information**

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**DOT:** Proper Shipping Name  
Nitric acid (other than red fuming with not more than 70% nitric acid)

Hazard Class

8

DOT Identification Number

2031

DOT Shipping Label

Corrosive

Packaging Requirements

II

**IMO/IMDG:** No data available

**IATA:** Same as DOT 49 CFR regulations. Consult IATA before shipping

**Comments:** None

**Section 15: Regulatory Information**

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**TSCA:** Listed in the TSCA**SARA: SARA Hazard Classes:**

Acute Health Hazard

SARA Title III - Section 313 Form "R"/TRI Reportable Chemical

**SARA Section 313 Notification:**

This product contains the following toxic chemical subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act of 1987 (40 CFR 372):

CAS#	Chemical Name	Percent by Weight
7697-37-2	Nitric Acid	< 20

**Canadian DSL:** 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.

DSL: No

NDSL: Yes

**European Union (EU)** Symbol of Danger: C**Regulatory** Indication of Danger: Corrosive.**Information:** R: 34

Risk Statements: Causes burns.

S: 26-36/37/39-45

Safety Statements: 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** None**Regulations:****Section 16: Other Information**

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**NFPA Rating**

Health: 3

Fire: 0

Reactivity: 0

**HMIS Rating**

Health: 3

Fire: 0

Reactivity: 0

Personal

Protection: J

**Precautionary Label**

Toxic

**Disclaimer:** In compliance with the OSHA Hazard communication Standard, 2.9 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 believe to be correct; however, you (the customer), should preform 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.

**SDS Author:** John Kerchner**Version Date:** 7/30/2015