

MSDS – Sculpt Nouveau  
PO Box 460459  
Escondido, CA 92046  
800-728-5787  
Fax 760-741-1074

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# CUPRIC NITRATE

MSDS Number: C5874 --- *Effective Date: 12/08/96*

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## 1. Product Identification

**Synonyms:** Cupric nitrate hemipentahydrate; nitric acid, copper (2+) salt, hydrate (2:5); copper II nitrate hemihydrate

**CAS No.:** 3251-23-8

**Molecular Weight:** 232.6

**Chemical Formula:**  $\text{Cu}(\text{NO}_3)_2 \cdot 2.5\text{H}_2\text{O}$

**Product Codes:** J.T. Baker: 1800, 1803 Mallinckrodt: 4828

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## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
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Cupric Nitrate	3251-23-8	100%	Yes

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## 3. Hazards Identification

### Emergency Overview

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**DANGER! STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE. HARMFUL IF SWALLOWED. AFFECTS THE LIVER AND KIDNEYS. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.**

J.T. Baker SAF-T-DATA<sup>(tm)</sup> Ratings (Provided here for your convenience)

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Health Rating: 1 - Slight  
Flammability Rating: 0 - None  
Reactivity Rating: 3 - Severe (Oxidizer)  
Contact Rating: 2 - Moderate  
Lab Protective Equip: GOGGLES; LAB COAT  
Storage Color Code: Yellow (Reactive)

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### Potential Health Effects

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#### Inhalation:

Causes irritation to respiratory tract, symptoms may include coughing, sore throat, and shortness of breath. May result in ulceration and perforation of respiratory tract. When heated, this compound may give off copper fume, which can cause symptoms similar to the common cold, including chills and stuffiness of the head.

#### Ingestion:

May cause burning pain in the mouth, esophagus, and stomach. Hemorrhagic gastritis, nausea, vomiting, abdominal pain, metallic taste, and diarrhea may occur. If vomiting does not occur immediately systemic copper poisoning may occur. Symptoms may include capillary damage, headache, cold sweat, weak pulse, kidney and liver damage, central nervous excitation followed by depression, jaundice, convulsions, blood effects, paralysis and coma. Death may occur from shock or renal failure.

#### Skin Contact:

Causes irritation to skin. Irritation may be severe.

#### Eye Contact:

Cause irritation, redness, pain, discoloration, and possible eye damage.

#### Chronic Exposure:

Prolonged or repeated skin exposure may cause dermatitis. Prolonged or repeated exposure to dusts of copper salts may cause discoloration of the skin or hair, blood and liver damage, ulceration and perforation of the nasal septum, runny nose, metallic taste, and atrophic changes and irritation of the mucous membranes.

#### Aggravation of Pre-existing Conditions:

Persons with pre-existing skin disorders, impaired liver, kidney, or pulmonary function, glucose 6-phosphate-dehydrogenase deficiency, or pre-existing Wilson's disease may be more susceptible to the effects of this material.

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## 4. First Aid Measures

### **Inhalation:**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

### **Ingestion:**

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Call a physician immediately.

### **Skin Contact:**

In case of contact, wipe off excess material from skin then immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. Call a physician.

### **Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

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## 5. Fire Fighting Measures

### **Fire:**

Not combustible, but substance is a strong oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition. Increases flammability of any combustible substance in contact with it.

### **Explosion:**

Contact with oxidizable substances may cause extremely violent combustion.

### **Fire Extinguishing Media:**

Water or water spray in early stages of fire. Foam or dry chemical may also be used.

### **Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

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## 6. Accidental Release Measures

Ventilate area of leak or spill. Keep unnecessary and unprotected people away from area of spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Pick up and place in a suitable container for reclamation or disposal, using a method that does not generate dust. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

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## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Separate from combustible, organic, or any other readily oxidizable materials. Do not store on wooden floors. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

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## 8. Exposure Controls/Personal Protection

### **Airborne Exposure Limits:**

-OSHA Permissible Exposure Limit (PEL): 1 mg/m<sup>3</sup> (TWA) for copper dusts & mists as Cu -ACGIH  
Threshold Limit Value (TLV): 1 mg/m<sup>3</sup> (TWA) for copper dusts & mists as Cu

### **Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

### **Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded, a half-face dust/mist respirator may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece dust/mist respirator may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

### **Skin Protection:**

Wear protective gloves and clean body-covering clothing.

### **Eye Protection:**

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

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## 9. Physical and Chemical Properties

**Appearance:**

Blue crystals.

**Odor:**

Odorless.

**Solubility:**

138g/100ml water @ 0C (trihydrate); soluble in water (anhydrous).

**Specific Gravity:**

2.32 (anhydrous), 2.05 (trihydrate)

**pH:**

No information found.

**% Volatiles by volume @ 21C (70F):**

0

**Boiling Point:**

170C (338F) Decomposes (anhydrous).

**Melting Point:**

115C (239F)

**Vapor Density (Air=1):**

No information found.

**Vapor Pressure (mm Hg):**

No information found.

**Evaporation Rate (BuAc=1):**

No information found.

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## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage.

**Hazardous Decomposition Products:**

Oxides of nitrogen and toxic metal fumes may form when heated to decomposition.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Paper, wood, organic materials, ether, potassium ferrocyanide, tin, acetylene, hydrazine, nitromethane,

ammonia + potassium amide, acetic anhydride, sodium hypobromite, nitromethanes, and any readily oxidizable substance.

**Conditions to Avoid:**

Incompatibles.

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## 11. Toxicological Information

Oral rat LD50: 794 mg/kg (anhydrous); skin rabbit (Draize) 500 mg, severe (anhydrous); eye rabbit (Draize) 100 mg, severe (anhydrous).

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
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Cupric Nitrate (3251-23-8)	No	No	None

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## 12. Ecological Information

**Environmental Fate:**

This material is expected to significantly bioaccumulate. This material has an experimentally-determined bioconcentration factor (BCF) of greater than 100. Bioaccumulation data for copper.

**Environmental Toxicity:**

This material is expected to be very toxic to aquatic life. The LC50/96-hour values for fish are less than 1 mg/l. The IC50/72-hour values for algae are less than 1 mg/l. Toxicity data for copper.

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### 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved incinerator or disposed in a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

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### 14. Transport Information

**Domestic (Land, D.O.T.)**  
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Proper Shipping Name: RQ, NITRATES, INORGANIC, N.O.S. (CUPRIC NITRATE)  
 Hazard Class: 5.1  
 UN/NA: UN1477  
 Packing Group: II  
 Information reported for product/size: 350LB

**International (Water, I.M.O.)**  
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Proper Shipping Name: NITRATES, INORGANIC, N.O.S. (CUPRIC NITRATE)  
 Hazard Class: 5.1  
 UN/NA: UN1477  
 Packing Group: II  
 Information reported for product/size: 350LB

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### 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----

Ingredient	TSCA	EC	Japan	Australia
Cupric Nitrate (3251-23-8)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----

Ingredient	Korea	DSL	NDSL	Phil.

--Canada--

Cupric Nitrate (3251-23-8) Yes Yes No Yes

-----\Federal, State & International Regulations - Part 1\-----

Ingredient	-SARA 302-		-----SARA 313-----	
	RQ	TPQ	List	Chemical Catg.
Cupric Nitrate (3251-23-8)	No	No	No	Copper compd/

-----\Federal, State & International Regulations - Part 2\-----

Ingredient	CERCLA	-RCRA-	-TSCA-
		261.33	8(d)
Cupric Nitrate (3251-23-8)	100	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No

SARA 311/312: Acute: Yes Chronic: Yes Fire: Yes Pressure: No

Reactivity: No (Pure / Solid)

**Australian Hazchem Code:** No information found.

**Poison Schedule:** No information found.

**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings: Health: 2 Flammability: 0 Reactivity: 0 Other: Oxidizer**

**Label Hazard Warning:**

DANGER! STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE. HARMFUL IF SWALLOWED. AFFECTS THE LIVER AND KIDNEYS. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.

**Label Precautions:**

Keep from contact with clothing and other combustible materials. Store in a tightly closed container. Avoid contact with eyes, skin and clothing. Avoid breathing dust. Use only with adequate ventilation. Wash thoroughly after handling.

**Label First Aid:**

If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, wipe off excess material from skin then immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. In all cases, get medical attention.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

Pure. New 16 section MSDS format, all sections have been revised.

**Disclaimer:**

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\*\*\*\*\* **Prepared by:** Strategic Services Division  
Phone Number: (314) 539-1600 (U.S.A.)