

# Material Safety Data Sheet

## SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

### Cerium Nitrate

**Product Use:** Alloy  
**Product Number(s):** 5372  
**Chemical Family:** Lanthanide nitrate  
**Company Identification**  
Molycorp Mineral, LLC  
HC-1 Box 224  
67750 Bailey Road  
Mountain Pass, CA 92366  
United States of America

### Transportation Emergency Response

CHEMTREC: (800) 424-9300 or (703) 527-3887 (collect)

### Health Emergency

California Poison Control System: (800) 356-3129

### Product Information

MSDS Information Requests: (760) 856-7619 (7:30am - 3:30pm, Pacific Time, Mon - Fri)

## SECTION 2 COMPOSITION/ INFORMATION ON INGREDIENTS

COMPONENTS	CAS NUMBER	AMOUNT (%weight)
Cerium Nitrate	10108-73-3	95-99+
Lanthanum Nitrate	10099-59-9	0-3
Neodymium Nitrate	10045-95-1	0-2
Nitric Acid	7697-37-2	<1

## SECTION 3 HAZARDS IDENTIFICATION

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### EMERGENCY OVERVIEW

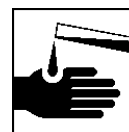
**NFPA RATINGS:** Health: 3 Flammability: 0 Reactivity: 0

Amber solution with acrid odor.

DANGER

CORROSIVE

May cause severe burns.



Harmful if inhaled or swallowed. Do not breathe vapor or mist.  
Do not get into eyes, on skin or on clothing.  
Wash thoroughly after handling. Wear appropriate personal protection equipment including corrosion-resistant gloves (Nitrile gloves).  
Prolonged over-exposure to dusts may cause lung damage.

If allowed to dry, dust is an oxidizer.  
Contact with dust may increase flammability of other materials.  
Keep container tightly closed.  
Avoid contact with clothing and other combustible material.

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**IMMEDIATE HEALTH EFFECTS:**

**Eye:** Corrosive. Contact may cause severe irritation, eye burns, and permanent eye damage.  
**Skin:** Corrosive. Contact may cause severe irritation, skin burns, and permanent skin damage.  
**Ingestion:** Corrosive. May be harmful or fatal if swallowed. May cause severe irritation and burns of the mouth, throat, and digestive tract.  
**Inhalation:** Corrosive. Mists may be harmful if inhaled. May cause severe irritation and burns of the mouth, throat, and respiratory tract.

**DELAYED OR OTHER HEALTH EFFECTS:**

Repeated overexposure to dust, if generated, may result in chronic lung disease. Persons with pre-existing skin disorders, eye disease, or cardiopulmonary diseases may be more susceptible to the effects of this substance.  
*See Section 11 – Toxicological Information.*

**POTENTIAL ENVIRONMENTAL EFFECTS:**

No information available.

**SECTION 4 FIRST AID MEASURES**

**Eye:** For direct contact, immediately hold eyelids apart and flush affected eye(s) with clean water for at least 30 minutes. Seek immediate medical attention.  
**Skin:** Immediately flush affected area(s) with large amounts of water while removing contaminated shoes and clothing. If skin surface is damaged, apply a clean dressing and seek immediate medical attention. If skin surface is not damaged, cleanse the affected area(s) thoroughly by washing with soap and water. If irritation or redness develops seek immediate medical attention. Discard contaminated clothing and shoes or thoroughly clean before reuse.  
**Ingestion (swallowing):** DO NOT INDUCE VOMITING. Corrosive material. Possible acid burns. If victim has any breathing difficulties, call for emergency help immediately. If victim is conscious and alert, immediately rinse mouth with water and dilute the ingested material by giving one glass of milk or water to drink. If possible, do not leave victim unattended and observe closely for adequacy of breathing. Seek immediate medical attention.  
**Inhalation (breathing):** Immediately move victim away from exposure and into fresh air. If respiratory or other symptoms develop, seek immediate medical attention. If victim is not breathing, clear airway and immediately begin artificial respiration.

## SECTION 5 FIRE FIGHTING MEASURES

### FIRE CLASSIFICATION:

OSHA Classification (29 CFR 1910.1200): Not classified by OSHA as flammable or combustible.

**NFPA RATINGS:** Health: 3 Flammability: 0 Reactivity: 0



### FLAMMABLE PROPERTIES:

<b>Flashpoint:</b>	Not applicable
<b>Autoignition:</b>	Not applicable
<b>Lower Explosive Limit (LEL):</b>	Not applicable
<b>Upper Explosive Limit (UEL):</b>	Not applicable

**EXTINGUISHING MEDIA:** If this material is involved in a fire: Use water fog, foam, dry chemical or carbon dioxide (CO<sub>2</sub>) to extinguish flames.

### PROTECTION OF FIRE FIGHTERS:

**Fire Fighting Instructions:** This material will not burn.

## SECTION 6 ACCIDENTAL RELEASE MEASURES

**Spill Management:** Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater. Clean up spill as soon as possible, observing precautions in *Section 8 – Exposure Controls and Personal Protection*. Use appropriate techniques such as applying non-combustible absorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations.

**Reporting:** Report spills to local authorities and/or the U.S. Coast Guard's National Response Center at (800) 424-8802 as appropriate or required.

## SECTION 7 HANDLING AND STORAGE

**Precautionary Measures:** Do not get in eyes, on skin, or on clothing. Do not breathe dust. Wash thoroughly after handling.

**General Handling Information:** Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.

**Static Hazard:** If dried, electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary but may not, by themselves, be sufficient. Review all operations which have the potential of generating and accumulating an electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures. For more information, refer to OSHA Standard 29 CFR 1910.106, 'Flammable and Combustible Liquids', National Fire Protection Association (NFPA 77, 'Recommended Practice on Static Electricity', and/or the American Petroleum Institute (API) Recommended Practice 2003, 'Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents'.

## SECTION 8 EXPOSURE CONTROLS AND PERSONAL PROTECTION

### EXPOSURE GUIDELINES:

Component	% by weight	Exposure Limit		
		Limit	Agency	Type
Nitric Acid (Mist)	<1	2 ppm	ACGIH	TWA
		4 ppm	ACGIH	STEL
		2 ppm	Cal. OSHA	PEL
		4 ppm	Cal. OSHA	STEL
		4 ppm	OSHA	PEL

### GENERAL CONSIDERATIONS:

Consider the potential hazards of this material (see Section 3), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

### ENGINEERING CONTROLS:

If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits, additional ventilation or exhaust systems may be required.

### PERSONAL PROTECTIVE EQUIPMENT:

**Eye/Face Protection:** The use of a face shield and/or chemical goggles to safe guard against potential eye contact, irritation, or injury is recommended. Eye wash and quick-drench shower facilities should be available in the work area.

**Skin Protection:** The use of gloves impermeable to the specific material handled is advised to prevent skin contact, possible irritation, absorption, and skin damage (i.e. Nitrile gloves) - see glove manufacturer literature for permeability information. Depending use conditions, apron, arm covers, or other impervious clothing may be necessary.

**Respiratory Protection:** If exposure to harmful levels of airborne material may occur when working with this material, wear an approved respirator that provides protection. Use a positive pressure air-supplying respirator in circumstances where air-purifying respirators may not provide adequate protection.

## SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Attention: the data below are typical values and do not constitute a specification.

<b>Color:</b>	Amber solution
<b>Physical State:</b>	Liquid
<b>Odor:</b>	Acrid, pungent
<b>pH:</b>	0.7-2.5
<b>Vapor Pressure:</b>	Not Available
<b>Vapor Density (Air = 1):</b>	Not Available
<b>Boiling Point:</b>	No information
<b>Solubility:</b>	No information
<b>Freezing/Melting Point:</b>	No information
<b>Density:</b>	1.90 g/cc
<b>Viscosity:</b>	No information
<b>Evaporation Rate:</b>	No information

## SECTION 10 STABILITY AND REACTIVITY

**Chemical Stability:** Stable under normal conditions of storage and handling. Oxidizer, if dry, and then promotes combustion in other materials.

**Incompatibility With Other Materials:** Avoid contact with combustible materials.

**Hazardous Decomposition Products:** Gaseous oxides of nitrogen form on decomposition of nitrates by temperatures exceeding 150°C and/or by oxidation reactions.

**Hazardous Polymerization:** Hazardous polymerization will not occur.

## SECTION 11 TOXICOLOGICAL INFORMATION

### IMMEDIATE HEALTH EFFECTS

#### **Cerium Nitrate (95-99%)**

**Eye Irritation:** Severe irritant in animal studies.

**Skin Irritation:** Moderate irritant in animal studies.

**Skin Sensitization:** A similar lanthanide, cerium oxide, is not sensitizing in guinea pig maximization test.

**Acute Dermal Toxicity:** Slightly toxic by this route based on the oral toxicity.

**Acute Oral Toxicity:** Slightly toxic by this route; Oral Rat LD50=4.2 g/kg.

**Acute Inhalation Toxicity:** Unknown toxicity by this route.

### OTHER HEALTH EFFECTS

**Chronic Inhalation Toxicity:** An accumulation of insoluble lanthanide particles has been observed in

the respiratory tract of humans following chronic occupational exposure and in rodents following chronic exposure to a similar lanthanide cerium oxide. Lymphoid hyperplasia in the bronchial lymph nodes was the critical inhalation health effect identified by the USEPA in a 2008 toxicological review of cerium oxide.

**Developmental/Reproductive Toxicity:** Unknown toxicity.

**Mutagenicity:** A similar lanthanide, cerium oxide, was negative in the Ames bacterial mutagenic test using bacterial strains TA135, TA1537, TA98, TA100, TA102, and WP2uvrA., and in the mouse *in vivo* micronucleus assay. However, nitrates are known to react chemically with other substances to form potentially mutagenic compounds.

**Carcinogenicity:** A similar lanthanide, lanthanum carbonate, was not carcinogenic in a two-year oral rat study. Not assessed by IARC, NTP, or USEPA. Nitric acid is not listed by IARC or NTP as carcinogenic.

## SECTION 12 ECOLOGICAL INFORMATION

### ECOTOXICITY

Unknown ecotoxicity.

### ENVIRONMENTAL FATE

**Ready Biodegradability:** This mineral product is not expected to be readily biodegradable.

## SECTION 13 DISPOSAL CONSIDERATIONS

Use material for its intended purpose or recycle if possible. This material, if discarded as produced, would be a RCRA "characteristic" hazardous waste due to corrosivity (D002). If the material is spilled to soil or water, characteristic testing of the impacted materials is recommended. Further, this material, once it becomes a waste, is subject to the land disposal restrictions in 40 CFR 268.40 and may require treatment prior to disposal to meet specific standards. Consult state or local regulations to determine whether they are more stringent than the federal requirements.

Container contents should be completely used and containers should be emptied prior to discard. Container rinsate should be considered a RCRA hazardous waste and must be disposed of with care and in full compliance with federal, state, and local regulations. Larger empty containers, such as drums, should be returned to the distributor or to a drum reconditioner. To assure proper disposal of smaller empty containers, consult with state and local regulations and disposal authorities.

**SECTION 14 TRANSPORT INFORMATION**

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

<b>DOT</b>	
UN proper shipping name:	Corrosive Liquid, n.o.s. (Cerium Nitrate)
UN Number:	UN1760
Hazardous Class:	9
Packaging Group:	II
<b>IMO/IMDG</b>	
UN proper shipping name:	Corrosive Liquid, n.o.s. (Cerium Nitrate)
UN Number:	UN1760
IMDG Class:	8
Packaging Group:	II
EMS Number:	F-A, S-B
<b>ICAO/IATA</b>	
UN proper shipping name:	Corrosive Liquid, n.o.s. (Cerium Nitrate)
UN Number:	UN1760
ICAO/IATA Class:	8
Packaging Group:	II
Label:	8

## SECTION 15 REGULATORY INFORMATION

### FEDERAL REGULATIONS

<b>EPCRA 311/312 CATEGORIES:</b>	
1. Immediate (Acute Health Effects):	YES
2. Delayed (Chronic Health Effects):	YES
3. Fire Hazard:	NO
4. Sudden Release of Pressure Hazard:	NO
5. Reactivity Hazard:	NO

### STATE REGULATIONS

**California:** The components in this material are not subject to the requirements of California Proposition 65 (CA Health & Safety Code Section 25249.5).

### REGULATORY LISTS SEARCHED

01-1=IARC Group 1  
01-2A=IARC Group 2A  
01-2B=IARC Group 2B  
02=NTP Carcinogen  
03=EPCRA 313  
04=CA Proposition 65  
05=MA RTK  
06=NJ RTK  
07=PA RTK

No components of this material were found on the regulatory lists above.

### INVENTORY STATUS

<b>INVENTORY:</b>	<b>STATUS</b>
AICS (Australia):	All components comply with inventory requirements
DSL (Canada):	All components comply with inventory requirements
EINECS (European Union):	All components comply with inventory requirements
ENCS (Japan):	All components comply with inventory requirements
IECSC (China):	All components comply with inventory requirements
KECI (Korea):	All components comply with inventory requirements
PICCS (Philippines):	All components comply with inventory requirements
TSCA (United States):	All components comply with inventory requirements

### OTHER REGULATORY INFORMATION

**WHMIS Classification (Canada):**

D2B – Materials causing other toxic effects (chronic respiratory disease)

E - Corrosive

## SECTION 16 OTHER INFORMATION

**NFPA RATINGS:** Health: 3 Flammability: 0 Reactivity: 0

(0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE:- Personal Protection Equipment Index recommendation, \*- Chronic Effect Indicator). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).



**REVISION STATEMENT:** This is a revised Material Safety Data Sheet.

**Revision Date:** August 8, 2008

**Previous Revision Date:** October 28, 2005

### ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

ACGIH: American Conference of Government Industrial Hygienists	IMO/IMDG: International Maritime Dangerous Goods Code
AICS: Australian Inventory of Chemical Substances	KECI: Korean Existing Chemical Inventory
API: American Petroleum Institute	MSDS: Material Safety Data Sheet
CAS: Chemical Abstract Service Number	MSHA: Mine Safety and Health Administration
CFR: Code of Federal Regulations	NFPA: National Fire Protection Association (US)
CVX: Chevron	NTP: National Toxicology Program (US)
DOT: Department of Transportation (US)	OSHA: Occupational Safety and Health Administration
DSL: Domestic Substances List (Canada)	PICCS: Phillipine Inventory of Chemicals and Chemical Substances
EINECS: European Inventory of Existing Chemical Substances	SARA: Superfund Amendments and Reauthorization Act (US)
ENCS: Existing and New Chemical Substances (Japan)	TSCA: Toxic Substances Control Act (US)
EPCRA: Emergency Planning and Community Right-to-Know Act (US)	TWA: Time Weighted Average
IARC: International Agency for Research on Cancer	USEPA: United States Environmental Protection Agency
ICAO: International Civil Aviation Organization (UN)	WHMIS: Workplace Hazardous Materials

Prepared according to the OSHA Hazard Communication Standard (29 CFR 1910.1200) and the ANSI MSDS Standard (Z400.1)

**The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.**