

Material: Calcium Cobalt Oxide( $\text{Ca}_3\text{Co}_4\text{O}_9$ )

Precursors: Calcium Nitrate( $\text{Ca}(\text{NO}_3)_2 \cdot 4\text{H}_2\text{O}$ ) & Cobalt Nitrate( $\text{Co}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$ )

Material doesn't contain MSDS sheet. So MSDS of precursors are attached.

## Material Safety Data Sheet

### Calcium nitrate tetrahydrate MSDS

#### Section 1: Chemical Product and Company Identification

**Product Name:** Calcium nitrate tetrahydrate

**Catalog Codes:** SLC2674, SLC1669

**CAS#:** 13477-34-4

**RTECS:** EW2985000

**TSCA:** TSCA 8(b) inventory: Calcium nitrate tetrahydrate

**Cl#:** Not available.

**Synonym:**

**Chemical Formula:**  $\text{Ca}(\text{NO}_3)_2 \cdot 4\text{H}_2\text{O}$

**Contact Information:**

**Sciencelab.com, Inc.**

14025 Smith Rd.

Houston, Texas 77396

US Sales: **1-800-901-7247**

International Sales: **1-281-441-4400**

Order Online: [ScienceLab.com](http://ScienceLab.com)

**CHEMTREC (24HR Emergency Telephone), call:**

1-800-424-9300

**International CHEMTREC, call:** 1-703-527-3887

**For non-emergency assistance, call:** 1-281-441-4400

#### Section 2: Composition and Information on Ingredients

**Composition:**

**Name CAS # % by Weight**

Calcium nitrate tetrahydrate 13477-34-4 100

**Toxicological Data on Ingredients:** Calcium nitrate tetrahydrate: ORAL (LD50): Acute: 3900 mg/kg [Rat].

#### Section 3: Hazards Identification

**Potential Acute Health Effects:**

Hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator). Prolonged exposure may result in skin burns and ulcerations. Over-exposure by inhalation may cause respiratory irritation.

**Potential Chronic Health Effects:**

CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available.

DEVELOPMENTAL TOXICITY: Not available. The substance is toxic to lungs, mucous membranes. Repeated or prolonged exposure to the substance can produce target organs damage.

#### Section 4: First Aid Measures

**Eye Contact:**

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Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Do not use an eye ointment. Seek medical attention.

**Skin Contact:**

After contact with skin, wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cold water may be used.

Cover the irritated skin with an emollient. If irritation persists, seek medical attention.

**Serious Skin Contact:**

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

**Inhalation:** Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

**Serious Inhalation:**

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

**Ingestion:**

Do not induce vomiting. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

**Serious Ingestion:** Not available.

**Section 5: Fire and Explosion Data**

**Flammability of the Product:** Non-flammable.

**Auto-Ignition Temperature:** Not applicable.

**Flash Points:** Not applicable.

**Flammable Limits:** Not applicable.

**Products of Combustion:** Not available.

**Fire Hazards in Presence of Various Substances:** Not applicable.

**Explosion Hazards in Presence of Various Substances:**

Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in

presence of static discharge: Not available.

**Fire Fighting Media and Instructions:** Not applicable.

**Special Remarks on Fire Hazards:** Not available.

**Special Remarks on Explosion Hazards:** Not available.

**Section 6: Accidental Release Measures**

**Small Spill:** Use appropriate tools to put the spilled solid in a convenient waste disposal container.

**Large Spill:**

Oxidizing material. Stop leak if without risk. Avoid contact with a combustible material (wood, paper, oil, clothing...). Keep

substance damp using water spray. Do not touch spilled material. Prevent entry into sewers, basements or confined areas;

dike if needed. Call for assistance on disposal.

**Section 7: Handling and Storage**

**Precautions:**

Keep locked up Keep away from heat. Keep away from sources of ignition. Keep away from combustible material Keep away

from direct sunlight or strong incandescent light. Do not ingest. Do not breathe dust. Avoid shock and friction. Wear suitable

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protective clothing In case of insufficient ventilation, wear suitable respiratory equipment If ingested, seek medical advice

immediately and show the container or the label. Avoid contact with skin and eyes Keep away from incompatibles such as reducing agents, organic materials.

**Storage:** This product should be stored away from oxidizing materials and strong bases.

## **Section 8: Exposure Controls/Personal Protection**

### **Engineering Controls:**

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

### **Personal Protection:**

Splash goggles. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

### **Personal Protection in Case of a Large Spill:**

Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

**Exposure Limits:** Not available.

## **Section 9: Physical and Chemical Properties**

**Physical state and appearance:** Solid.

**Odor:** Not available.

**Taste:** Not available.

**Molecular Weight:** 236.15 g/mole

**Color:** Not available.

**pH (1% soln/water):** Not available.

**Boiling Point:** Not available.

**Melting Point:** 42.7°C (108.9°F)

**Critical Temperature:** Not available.

**Specific Gravity:** 1.82 (Water = 1)

**Vapor Pressure:** Not applicable.

**Vapor Density:** Not available.

**Volatility:** Not available.

**Odor Threshold:** Not available.

**Water/Oil Dist. Coeff.:** Not available.

**Ionicity (in Water):** Not available.

**Dispersion Properties:** See solubility in water.

**Solubility:** Easily soluble in cold water.

## **Section 10: Stability and Reactivity Data**

**Stability:** The product is stable.

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**Instability Temperature:** Not available.

**Conditions of Instability:** Not available.

### **Incompatibility with various substances:**

Reactive with reducing agents, organic materials. The product may undergo hazardous decomposition, condensation or

polymerization, it may react violently with water to emit toxic gases or it may become self-reactive under conditions of shock or

increase in temperature or pressure.

**Corrosivity:** Non-corrosive in presence of glass.

**Special Remarks on Reactivity:** Not available.

**Special Remarks on Corrosivity:** Not available.

**Polymerization:** No.

## Section 11: Toxicological Information

**Routes of Entry:** Eye contact. Inhalation. Ingestion.

**Toxicity to Animals:** Acute oral toxicity (LD50): 3900 mg/kg [Rat].

**Chronic Effects on Humans:** The substance is toxic to lungs, mucous membranes.

**Other Toxic Effects on Humans:**

Hazardous in case of skin contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator).

**Special Remarks on Toxicity to Animals:** Not available.

**Special Remarks on Chronic Effects on Humans:** Not available.

**Special Remarks on other Toxic Effects on Humans:** Not available.

## Section 12: Ecological Information

**Ecotoxicity:** Not available.

**BOD5 and COD:** Not available.

**Products of Biodegradation:**

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

**Toxicity of the Products of Biodegradation:** The products of degradation are more toxic.

**Special Remarks on the Products of Biodegradation:** Not available.

## Section 13: Disposal Considerations

**Waste Disposal:**

## Section 14: Transport Information

**DOT Classification:** CLASS 5.1: Oxidizing material.

**Identification:** : Calcium Nitrate : UN1454 PG: III

**Special Provisions for Transport:** Marine Pollutant

## Section 15: Other Regulatory Information

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**Federal and State Regulations:** TSCA 8(b) inventory: Calcium nitrate tetrahydrate

**Other Regulations:** OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

**Other Classifications:**

**WHMIS (Canada):**

CLASS C: Oxidizing material. CLASS F: Dangerously reactive material.

**DSCL (EEC):** R36/38- Irritating to eyes and skin.

**HMIS (U.S.A.):**

**Health Hazard:** 2

**Fire Hazard:** 0

**Reactivity:** 0

**Personal Protection:** E

**National Fire Protection Association (U.S.A.):**

**Health:** 2

**Flammability:** 0

**Reactivity:** 0

**Specific hazard:**

**Protective Equipment:**

Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

## Section 16: Other Information

**References:** Not available.

**Other Special Considerations:** Not available.

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**Last Updated:** 05/21/2013 12:00 PM

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## Material Safety Data Sheet

### Cobalt nitrate hexahydrate MSDS

#### Section 1: Chemical Product and Company Identification

**Product Name:** Cobalt nitrate hexahydrate

**Catalog Codes:** SLC4837

**CAS#:** 10026-22-9

**RTECS:** Not available.

**TSCA:** TSCA 8(b) inventory: Cobalt nitrate hexahydrate

**Cl#:** Not available.

**Synonym:**

**Chemical Formula:**  $\text{Co}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$

**Contact Information:**

**Sciencelab.com, Inc.**

14025 Smith Rd.

Houston, Texas 77396

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International Sales: **1-281-441-4400**

Order Online: [ScienceLab.com](http://ScienceLab.com)

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1-800-424-9300

**International CHEMTREC, call:** 1-703-527-3887

**For non-emergency assistance, call:** 1-281-441-4400

#### Section 2: Composition and Information on Ingredients

**Composition:**

**Name CAS # % by Weight**

Cobalt nitrate hexahydrate 10026-22-9 100

**Toxicological Data on Ingredients:** Cobalt nitrate hexahydrate: ORAL (LD50): Acute: 691 mg/kg [Rat].

#### Section 3: Hazards Identification

**Potential Acute Health Effects:**

Hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Prolonged exposure may result

in skin burns and ulcerations. Over-exposure by inhalation may cause respiratory irritation.

**Potential Chronic Health Effects:**

CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available.

DEVELOPMENTAL TOXICITY: Not available. The substance is toxic to lungs, gastrointestinal tract, upper respiratory tract, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

## Section 4: First Aid Measures

### Eye Contact:

Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Do not use an eye ointment. Seek medical attention.

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### Skin Contact:

After contact with skin, wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cold water may be used.

Cover the irritated skin with an emollient. If irritation persists, seek medical attention.

### Serious Skin Contact:

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

**Inhalation:** Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

### Serious Inhalation:

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If

breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

### Ingestion:

Do not induce vomiting. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that

the toxic material was ingested; the absence of such signs, however, is not conclusive. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

**Serious Ingestion:** Not available.

## Section 5: Fire and Explosion Data

**Flammability of the Product:** Non-flammable.

**Auto-Ignition Temperature:** Not applicable.

**Flash Points:** Not applicable.

**Flammable Limits:** Not applicable.

**Products of Combustion:** Not available.

**Fire Hazards in Presence of Various Substances:** Not applicable.

**Explosion Hazards in Presence of Various Substances:**

Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in

presence of static discharge: Not available.

**Fire Fighting Media and Instructions:** Not applicable.

**Special Remarks on Fire Hazards:** Not available.

**Special Remarks on Explosion Hazards:** Not available.

## Section 6: Accidental Release Measures

**Small Spill:** Use appropriate tools to put the spilled solid in a convenient waste disposal container.

### Large Spill:

Oxidizing material. Stop leak if without risk. Avoid contact with a combustible material (wood, paper, oil, clothing...). Keep

substance damp using water spray. Do not touch spilled material. Prevent entry into sewers, basements or confined areas;

dike if needed. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV.

Check TLV on the MSDS and with local authorities.

## Section 7: Handling and Storage

### Precautions:

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Keep away from heat. Keep away from sources of ignition. Keep away from combustible material Do not ingest. Do not

breathe dust. Wear suitable protective clothing In case of insufficient ventilation, wear suitable respiratory equipment If

ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes

**Storage:** Oxidizing materials should be stored in a separate safety storage cabinet or room.

## Section 8: Exposure Controls/Personal Protection

### Engineering Controls:

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended

exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants

below the exposure limit.

### Personal Protection:

Splash goggles. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

### Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid

inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this

product.

### Exposure Limits:

TWA: 0.02 (mg/m<sup>3</sup>) from ACGIH [1995] Consult local authorities for acceptable exposure limits.

## Section 9: Physical and Chemical Properties

**Physical state and appearance:** Solid.

**Odor:** Not available.

**Taste:** Not available.

**Molecular Weight:** 291.03 g/mole

**Color:** Not available.

**pH (1% soln/water):** Not available.

**Boiling Point:** Decomposes. (74°C or 165.2°F)

**Melting Point:** 56°C (132.8°F)

**Critical Temperature:** Not available.

**Specific Gravity:** 1.88 (Water = 1)

**Vapor Pressure:** Not applicable.

**Vapor Density:** Not available.

**Volatility:** Not available.

**Odor Threshold:** Not available.

**Water/Oil Dist. Coeff.:** Not available.

**Ionicity (in Water):** Not available.

**Dispersion Properties:** See solubility in water.

**Solubility:** Easily soluble in cold water, hot water.

## Section 10: Stability and Reactivity Data

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**Stability:** The product is stable.

**Instability Temperature:** Not available.

**Conditions of Instability:** Not available.

**Incompatibility with various substances:** Not available.

**Corrosivity:** Not available.

**Special Remarks on Reactivity:** Not available.

**Special Remarks on Corrosivity:** Not available.

**Polymerization:** No.

### **Section 11: Toxicological Information**

**Routes of Entry:** Absorbed through skin. Eye contact. Inhalation. Ingestion.

**Toxicity to Animals:** Acute oral toxicity (LD50): 691 mg/kg [Rat].

**Chronic Effects on Humans:** The substance is toxic to lungs, gastrointestinal tract, upper respiratory tract, central nervous system (CNS).

**Other Toxic Effects on Humans:** Hazardous in case of skin contact (irritant), of ingestion, of inhalation.

**Special Remarks on Toxicity to Animals:** Not available.

**Special Remarks on Chronic Effects on Humans:** Not available.

**Special Remarks on other Toxic Effects on Humans:** Not available.

### **Section 12: Ecological Information**

**Ecotoxicity:** Not available.

**BOD5 and COD:** Not available.

**Products of Biodegradation:**

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

**Toxicity of the Products of Biodegradation:** The products of degradation are less toxic than the product itself.

**Special Remarks on the Products of Biodegradation:** Not available.

### **Section 13: Disposal Considerations**

**Waste Disposal:**

### **Section 14: Transport Information**

**DOT Classification:** CLASS 5.1: Oxidizing material.

**Identification:** : Nitrate, inorganic, n.o.s. (Cobalt nitrate Hexahydrate) : UN1477 PG: III

**Special Provisions for Transport:** Marine Pollutant

### **Section 15: Other Regulatory Information**

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**Federal and State Regulations:**

Pennsylvania RTK: Cobalt nitrate hexahydrate Massachusetts RTK: Cobalt nitrate hexahydrate TSCA 8(b) inventory: Cobalt

nitrate hexahydrate SARA 313 toxic chemical notification and release reporting: Cobalt nitrate hexahydrate

**Other Regulations:** OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

**Other Classifications:**

**WHMIS (Canada):**

CLASS C: Oxidizing material. CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

**DSCL (EEC):** R36/38- Irritating to eyes and skin.

**HMIS (U.S.A.):**

**Health Hazard:** 2

**Fire Hazard:** 0

**Reactivity:** 0

**Personal Protection:** E

**National Fire Protection Association (U.S.A.):**

**Health:** 2

**Flammability:** 0

**Reactivity:** 0

**Specific hazard:**

**Protective Equipment:**

Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

### **Section 16: Other Information**



**References:** Not available.

**Other Special Considerations:** Not available.

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