1. Identification

Product Name: Cobalt(II) nitrate hexahydrate

Cat No.: AC423580000; AC423580025; AC423580050; AC423581000; AC423585000

CAS-No: 10026-22-9

Synonyms: Cobaltous nitrate hexahydrate

Recommended Use: Laboratory chemicals.

Uses advised against: Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet:

Company:
- Fisher Scientific
  - One Reagent Lane
  - Fair Lawn, NJ 07410
  - Tel: (201) 796-7100
- Acros Organics
  - One Reagent Lane
  - Fair Lawn, NJ 07410

Emergency Telephone Number:
- For information US call: 001-800-ACROS-01 / Europe call: +32 14 57 52 11
- Emergency Number US: 001-201-796-7100 / Europe: +32 14 57 52 99
- CHEMTREC Tel. No.: US: 001-800-424-9300 / Europe: 001-703-527-3887

2. Hazard(s) identification

Classification:
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxidizing solids</td>
<td>Category 2</td>
</tr>
<tr>
<td>Acute oral toxicity</td>
<td>Category 4</td>
</tr>
<tr>
<td>Acute Inhalation Toxicity - Dusts and Mists</td>
<td>Category 4</td>
</tr>
<tr>
<td>Serious Eye Damage/Eye Irritation</td>
<td>Category 1</td>
</tr>
<tr>
<td>Respiratory Sensitization</td>
<td>Category 1</td>
</tr>
<tr>
<td>Skin Sensitization</td>
<td>Category 1</td>
</tr>
<tr>
<td>Germ Cell Mutagenicity</td>
<td>Category 2</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>Category 1B</td>
</tr>
<tr>
<td>Reproductive Toxicity</td>
<td>Category 1B</td>
</tr>
</tbody>
</table>

Label Elements:

Signal Word: Danger
Cobalt(II) nitrate hexahydrate

Hazard Statements
May intensify fire; oxidizer
May cause an allergic skin reaction
May damage fertility
Causes serious eye damage
May cause allergy or asthma symptoms or breathing difficulties if inhaled
Suspected of causing genetic defects
May cause cancer by inhalation
Harmful if swallowed or if inhaled

Precautionary Statements
Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Avoid breathing dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
In case of inadequate ventilation wear respiratory protection
Contaminated work clothing should not be allowed out of the workplace
Wear protective gloves
Keep away from heat/sparks/open flames/hot surfaces. - No smoking
Keep/Store away from clothing/ other combustible materials
Take any precaution to avoid mixing with combustibles
Response
IF exposed or concerned: Get medical attention/advice
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician
Skin
IF ON SKIN: Wash with plenty of soap and water
If skin irritation or rash occurs: Get medical advice/attention
Wash contaminated clothing before reuse
Eyes
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Immediately call a POISON CENTER or doctor/physician
Ingestion
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
Rinse mouth
Fire
In case of fire: Use CO2, dry chemical, or foam for extinction
Storage
Store locked up
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
Very toxic to aquatic life with long lasting effects
3. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cobalt(II) nitrate</td>
<td>10141-05-6</td>
<td>-</td>
</tr>
<tr>
<td>Cobalt nitrate hexahydrate</td>
<td>10026-22-9</td>
<td>&gt;95</td>
</tr>
</tbody>
</table>

4. First-aid measures

**General Advice**
Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

**Eye Contact**
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

**Skin Contact**
Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.

**Inhalation**
Remove to fresh air. If not breathing, give artificial respiration. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.

**Ingestion**
Do NOT induce vomiting. Call a physician or poison control center immediately.

**Most important symptoms and effects**
Causes eye burns. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause allergic skin reaction. Causes severe eye damage. Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing.

**Notes to Physician**
Treat symptomatically

5. Fire-fighting measures

**Suitable Extinguishing Media**
Water spray, carbon dioxide (CO2), dry chemical, alcohol-resistant foam.

**Unsuitable Extinguishing Media**
No information available

**Flash Point**
No information available

**Method**
No information available

**Autoignition Temperature**
No information available

**Explosion Limits**

<table>
<thead>
<tr>
<th>Type</th>
<th>Upper</th>
<th>Lower</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No data available</td>
<td>No data available</td>
</tr>
</tbody>
</table>

**Oxidizing Properties**
Oxidizer

**Sensitivity to Mechanical Impact**
No information available

**Sensitivity to Static Discharge**
No information available

**Specific Hazards Arising from the Chemical**
Oxidizer: Contact with combustible/organic material may cause fire. Do not allow run-off from fire-fighting to enter drains or water courses. May ignite combustibles (wood paper, oil, clothing, etc.).

**Hazardous Combustion Products**
Nitrogen oxides (NOx). Cobalt oxides.

**Protective Equipment and Precautions for Firefighters**
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.
6. Accidental release measures

Personal Precautions
Ensure adequate ventilation. Use personal protective equipment as required. Avoid dust formation. Keep people away from and upwind of spill/leak. Evacuate personnel to safe areas.

Environmental Precautions
Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system. Prevent product from entering drains. Local authorities should be advised if significant spillages cannot be contained. Should not be released into the environment.

Methods for Containment and Clean Up
Sweep up and shovel into suitable containers for disposal. Avoid dust formation. Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Sweep up and shovel into suitable containers for disposal.

7. Handling and storage

Handling
Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Avoid dust formation. Use only under a chemical fume hood. Do not breathe (dust, vapor, mist, gas). Do not ingest. If swallowed then seek immediate medical assistance. Keep away from clothing and other combustible materials.

Storage
Keep containers tightly closed in a dry, cool and well-ventilated place. Do not store near combustible materials.

8. Exposure controls / personal protection

Exposure Guidelines

<table>
<thead>
<tr>
<th>Component</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>NIOSH IDLH</th>
<th>Mexico OEL (TWA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cobalt(II) nitrate</td>
<td>TWA: 0.02 mg/m³</td>
<td></td>
<td></td>
<td>TWA: 0.02 mg/m³</td>
</tr>
<tr>
<td>Cobalt nitrate hexahydrate</td>
<td>TWA: 0.02 mg/m³</td>
<td></td>
<td></td>
<td>TWA: 0.02 mg/m³</td>
</tr>
</tbody>
</table>

Legend
ACGIH - American Conference of Governmental Industrial Hygienists

Engineering Measures
Use only under a chemical fume hood. Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation, especially in confined areas.

Personal Protective Equipment

Eye/face Protection
Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA’s eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection
Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection
Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures
Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State
Solid
**Appearance** | Red brown  
**Odor** | Odorless  
**Odor Threshold** | No information available  
**pH** | No information available  
**Melting Point/Range** | 55 - 56 °C / 131 - 132.8 °F  
**Boiling Point/Range** | No information available  
**Flash Point** | Not applicable  
**Flammability (solid, gas)** | No information available  
**Flammability or explosive limits** | No data available  
**Upper** |  
**Lower** |  
**Vapor Pressure** | No information available  
**Vapor Density** | Not applicable  
**Specific Gravity** | No information available  
**Solubility** | 134 g/100ml  
**Partition coefficient; n-octanol/water** | No data available  
**Autoignition Temperature** | No information available  
**Decomposition Temperature** | No information available  
**Viscosity** | Not applicable  
**Molecular Formula** | Co N2 O6 . 6 H2 O  
**Molecular Weight** | 291.02

### 10. Stability and reactivity

**Reactive Hazard** | Yes  
**Stability** | Hygroscopic. Oxidizer: Contact with combustible/organic material may cause fire.  
**Conditions to Avoid** | Incompatible products. Excess heat. Avoid dust formation. Exposure to moist air or water. Combustible material.  
**Incompatible Materials** | Strong oxidizing agents, Strong reducing agents, Combustible material  
**Hazardous Decomposition Products** | Nitrogen oxides (NOx), Cobalt oxides  
**Hazardous Polymerization** | Hazardous polymerization does not occur.  
**Hazardous Reactions** | None under normal processing.

### 11. Toxicological information

**Acute Toxicity**

<table>
<thead>
<tr>
<th>Component</th>
<th>LD50 Oral</th>
<th>LD50 Dermal</th>
<th>LC50 Inhalation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cobalt(II) nitrate</td>
<td>LD50 = 434 mg/kg (Rat)</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
<tr>
<td>Cobalt nitrate hexahydrate</td>
<td>LD50 = 691 mg/kg (Rat)</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
</tbody>
</table>

**Toxicologically Synergistic Products** | No information available  
**Delayed and immediate effects as well as chronic effects from short and long-term exposure**

**Irritation** | Causes eye burns  
**Sensitization** | May cause sensitization by skin contact  
**Carcinogenicity** | The table below indicates whether each agency has listed any ingredient as a carcinogen.
### Cobalt(II) nitrate hexahydrate

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>IARC</th>
<th>NTP</th>
<th>ACGIH</th>
<th>OSHA</th>
<th>Mexico</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cobalt(II) nitrate</td>
<td>10141-05-6</td>
<td>Group 2B</td>
<td>Reasonably Anticipated</td>
<td>A3</td>
<td>X</td>
<td>Not listed</td>
</tr>
<tr>
<td>Cobalt nitrate hexahydrate</td>
<td>10026-22-9</td>
<td>Group 2B</td>
<td>Reasonably Anticipated</td>
<td>A3</td>
<td>X</td>
<td>Not listed</td>
</tr>
</tbody>
</table>

**IARC (International Agency for Research on Cancer)**
- **Group 1** - Carcinogenic to Humans
- **Group 2A** - Probably Carcinogenic to Humans
- **Group 2B** - Possibly Carcinogenic to Humans

**ACGIH: (American Conference of Governmental Industrial Hygienists)**
- **A1** - Known Human Carcinogen
- **A2** - Suspected Human Carcinogen
- **A3** - Animal Carcinogen

**Mutagenic Effects**
- Mutagenic effects have occurred in experimental animals.

**Reproductive Effects**
- Possible risk of impaired fertility.

**Developmental Effects**
- No information available.

**Teratogenicity**
- No information available.

**STOT - single exposure**
- None known

**STOT - repeated exposure**
- None known

**Aspiration hazard**
- No information available

**Symptoms / effects, both acute and delayed**
- Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing

**Endocrine Disruptor Information**
- No information available

**Other Adverse Effects**
- The toxicological properties have not been fully investigated.

### 12. Ecological information

**Ecotoxicity**
The product contains following substances which are hazardous for the environment. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. May cause long-term adverse effects in the environment. Do not allow material to contaminate ground water system.

**Persistence and Degradability**
- based on information available. May persist

**Bioaccumulation/ Accumulation**
- No information available.

**Mobility**
- Will likely be mobile in the environment due to its water solubility

### 13. Disposal considerations

**Waste Disposal Methods**
- Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

### 14. Transport information

**DOT**
- **UN-No**
- **Proper Shipping Name**
- **Technical Name**
- **Hazard Class**
- **Packing Group**
- **TDG**
- **UN-No**
- **Proper Shipping Name**
- **NITRATES, INORGANIC, N.O.S.**

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15. Regulatory information

United States of America Inventory

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>TSCA</th>
<th>TSCA Inventory notification - Active/Inactive</th>
<th>TSCA - EPA Regulatory Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cobalt(II) nitrate</td>
<td>10141-05-6</td>
<td>X</td>
<td>ACTIVE</td>
<td></td>
</tr>
<tr>
<td>Cobalt nitrate hexahydrate</td>
<td>10026-22-9</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Legend:
TSCA - Toxic Substances Control Act, (40 CFR Part 710)
X - Listed
'-' - Not Listed

TSCA 12(b) - Notices of Export
Not applicable

International Inventories
Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Australia (AICS), China (IECSC), Korea (ECL).

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>DSL</th>
<th>NDSL</th>
<th>EINECS</th>
<th>PICCS</th>
<th>ENCS</th>
<th>AICS</th>
<th>IECSC</th>
<th>KECL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cobalt(II) nitrate</td>
<td>10141-05-6</td>
<td>X</td>
<td>-</td>
<td>233-402-1</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>KE-06102</td>
</tr>
<tr>
<td>Cobalt nitrate hexahydrate</td>
<td>10026-22-9</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>-</td>
</tr>
</tbody>
</table>

U.S. Federal Regulations

SARA 313

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>Weight %</th>
<th>SARA 313 - Threshold Values %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cobalt(II) nitrate</td>
<td>10141-05-6</td>
<td>-</td>
<td>0.1</td>
</tr>
<tr>
<td>Cobalt nitrate hexahydrate</td>
<td>10026-22-9</td>
<td>&gt;95</td>
<td>0.1 1.0</td>
</tr>
</tbody>
</table>

SARA 311/312 Hazard Categories
See section 2 for more information

CWA (Clean Water Act)
Not applicable

Clean Air Act

<table>
<thead>
<tr>
<th>Component</th>
<th>HAPS Data</th>
<th>Class 1 Ozone Depletors</th>
<th>Class 2 Ozone Depletors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cobalt(II) nitrate</td>
<td>X</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cobalt nitrate hexahydrate</td>
<td>X</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

OSHA - Occupational Safety and Health Administration
Not applicable

CERCLA
Not applicable

California Proposition 65
This product does not contain any Proposition 65 chemicals.
U.S. State Right-to-Know Regulations

<table>
<thead>
<tr>
<th>Component</th>
<th>Massachusetts</th>
<th>New Jersey</th>
<th>Pennsylvania</th>
<th>Illinois</th>
<th>Rhode Island</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cobalt(II) nitrate</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Cobalt nitrate hexahydrate</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>-</td>
</tr>
</tbody>
</table>

U.S. Department of Transportation

Reportable Quantity (RQ): N
DOT Marine Pollutant: N
DOT Severe Marine Pollutant: N

U.S. Department of Homeland Security
This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade: No information available

16. Other information

Prepared By: Regulatory Affairs, Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date: 09-Mar-2004
Revision Date: 23-Jan-2018
Print Date: 23-Jan-2018
Revision Summary: This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of SDS