

## SAFETY DATA SHEET

Version 6.7  
Revision Date 07/16/2021  
Print Date 01/15/2022

**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1 Product identifiers**

Product name : Cobalt(II) nitrate hexahydrate

Product Number : 230375  
Brand : SIGALD  
CAS-No. : 10026-22-9

**1.2 Relevant identified uses of the substance or mixture and uses advised against**

Identified uses : Laboratory chemicals, Synthesis of substances

**1.3 Details of the supplier of the safety data sheet**

Company : Sigma-Aldrich Inc.  
3050 SPRUCE ST  
ST. LOUIS MO 63103  
UNITED STATES

Telephone : +1 314 771-5765  
Fax : +1 800 325-5052

**1.4 Emergency telephone**

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-  
527-3887 CHEMTREC (International) 24  
Hours/day; 7 Days/week

**SECTION 2: Hazards identification****2.1 Classification of the substance or mixture****GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**

Oxidizing solids (Category 2), H272  
Acute toxicity, Oral (Category 4), H302  
Serious eye damage (Category 1), H318  
Respiratory sensitization (Category 1), H334  
Skin sensitization (Category 1), H317  
Germ cell mutagenicity (Category 2), H341  
Carcinogenicity, Inhalation (Category 1B), H350  
Reproductive toxicity (Category 1B), H360  
Short-term (acute) aquatic hazard (Category 1), H400  
Long-term (chronic) aquatic hazard (Category 1), H410

For the full text of the H-Statements mentioned in this Section, see Section 16.

**2.2 GHS Label elements, including precautionary statements**

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Pictogram



Signal word

Danger

Hazard statement(s)

|      |                                                                            |
|------|----------------------------------------------------------------------------|
| H272 | May intensify fire; oxidizer.                                              |
| H302 | Harmful if swallowed.                                                      |
| H317 | May cause an allergic skin reaction.                                       |
| H318 | Causes serious eye damage.                                                 |
| H334 | May cause allergy or asthma symptoms or breathing difficulties if inhaled. |
| H341 | Suspected of causing genetic defects.                                      |
| H350 | May cause cancer by inhalation.                                            |
| H360 | May damage fertility or the unborn child.                                  |
| H410 | Very toxic to aquatic life with long lasting effects.                      |

Precautionary statement(s)

|                           |                                                                                                                                                                            |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| P201                      | Obtain special instructions before use.                                                                                                                                    |
| P202                      | Do not handle until all safety precautions have been read and understood.                                                                                                  |
| P210                      | Keep away from heat.                                                                                                                                                       |
| P220                      | Keep/Store away from clothing/ combustible materials.                                                                                                                      |
| P221                      | Take any precaution to avoid mixing with combustibles.                                                                                                                     |
| P261                      | Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.                                                                                                                      |
| P264                      | Wash skin thoroughly after handling.                                                                                                                                       |
| P270                      | Do not eat, drink or smoke when using this product.                                                                                                                        |
| P272                      | Contaminated work clothing must not be allowed out of the workplace.                                                                                                       |
| P273                      | Avoid release to the environment.                                                                                                                                          |
| P280                      | Wear protective gloves/ protective clothing/ eye protection/ face protection.                                                                                              |
| P285                      | In case of inadequate ventilation wear respiratory protection.                                                                                                             |
| P301 + P312 + P330        | IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell. Rinse mouth.                                                                                                |
| P302 + P352               | IF ON SKIN: Wash with plenty of soap and water.                                                                                                                            |
| P304 + P341               | IF INHALED: If breathing is difficult, remove person to fresh air and keep comfortable for breathing.                                                                      |
| P305 + P351 + P338 + P310 | 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/ doctor. |
| P308 + P313               | IF exposed or concerned: Get medical advice/ attention.                                                                                                                    |
| P333 + P313               | If skin irritation or rash occurs: Get medical advice/ attention.                                                                                                          |
| P363                      | Wash contaminated clothing before reuse.                                                                                                                                   |
| P370 + P378               | In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.                                                                                       |
| P391                      | Collect spillage.                                                                                                                                                          |
| P405                      | Store locked up.                                                                                                                                                           |
| P501                      | Dispose of contents/ container to an approved waste disposal plant.                                                                                                        |

### 2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

## SECTION 3: Composition/information on ingredients

### 3.1 Substances

|                  |                                                      |
|------------------|------------------------------------------------------|
| Synonyms         | : Cobaltous nitratehexahydrate                       |
| Formula          | : $\text{CoN}_2\text{O}_6 \cdot 6\text{H}_2\text{O}$ |
| Molecular weight | : 291.03 g/mol                                       |
| CAS-No.          | : 10026-22-9                                         |
| EC-No.           | : 600-049-3                                          |

| Component                             | Classification                                                                                                                                                                                                                                                                                                                         | Concentration |
|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| <b>Cobaltous nitrate, hexahydrate</b> |                                                                                                                                                                                                                                                                                                                                        |               |
|                                       | Ox. Sol. 2; Acute Tox. 4;<br>Eye Dam. 1; Resp. Sens.<br>1; Skin Sens. 1; Muta. 2;<br>Carc. 1B; Repr. 1B;<br>Aquatic Acute 1; Aquatic<br>Chronic 1; H272, H302,<br>H318, H334, H317, H341,<br>H350, H360, H400, H410<br>Concentration limits:<br>>= 0.01 %: Carc. 1B,<br>H350i;<br>M-Factor - Aquatic Acute:<br>10 - Aquatic Chronic: 1 | <= 100 %      |

For the full text of the H-Statements mentioned in this Section, see Section 16.

## SECTION 4: First aid measures

### 4.1 Description of first-aid measures

#### General advice

First aiders need to protect themselves. Show this material safety data sheet to the doctor in attendance.

#### If inhaled

After inhalation: fresh air. Call in physician.

#### In case of skin contact

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Consult a physician.

#### In case of eye contact

After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist. Remove contact lenses.

#### If swallowed

After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

### 4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

#### **4.3 Indication of any immediate medical attention and special treatment needed**

No data available

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### **SECTION 5: Firefighting measures**

#### **5.1 Extinguishing media**

##### **Suitable extinguishing media**

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

##### **Unsuitable extinguishing media**

For this substance/mixture no limitations of extinguishing agents are given.

#### **5.2 Special hazards arising from the substance or mixture**

Nitrogen oxides (NO<sub>x</sub>)

Cobalt/cobalt oxides

Not combustible.

Has a fire-promoting effect due to release of oxygen.

Ambient fire may liberate hazardous vapours.

#### **5.3 Advice for firefighters**

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

#### **5.4 Further information**

Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

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### **SECTION 6: Accidental release measures**

#### **6.1 Personal precautions, protective equipment and emergency procedures**

Advice for non-emergency personnel: Avoid generation and inhalation of dusts in all circumstances. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

For personal protection see section 8.

#### **6.2 Environmental precautions**

Do not let product enter drains.

#### **6.3 Methods and materials for containment and cleaning up**

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully. Dispose of properly. Clean up affected area. Avoid generation of dusts.

#### **6.4 Reference to other sections**

For disposal see section 13.

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### **SECTION 7: Handling and storage**

#### **7.1 Precautions for safe handling**

##### **Advice on safe handling**

Work under hood. Do not inhale substance/mixture.

**Advice on protection against fire and explosion**

Keep away from open flames, hot surfaces and sources of ignition.

**Hygiene measures**

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

For precautions see section 2.2.

**7.2 Conditions for safe storage, including any incompatibilities****Storage conditions**

Tightly closed. Keep locked up or in an area accessible only to qualified or authorized persons. Do not store near combustible materials.

Storage class (TRGS 510): 5.1B: Oxidizing hazardous materials

**7.3 Specific end use(s)**

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

**SECTION 8: Exposure controls/personal protection****8.1 Control parameters****Ingredients with workplace control parameters**

| Component                      | CAS-No.    | Value                                                                                                             | Control parameters     | Basis                                   |
|--------------------------------|------------|-------------------------------------------------------------------------------------------------------------------|------------------------|-----------------------------------------|
| Cobaltous nitrate, hexahydrate | 10026-22-9 | TWA                                                                                                               | 0.02 mg/m <sup>3</sup> | USA. ACGIH Threshold Limit Values (TLV) |
|                                | Remarks    | Dermal Sensitization<br>Respiratory sensitization<br>Confirmed animal carcinogen with unknown relevance to humans |                        |                                         |

**Biological occupational exposure limits**

| Component                      | CAS-No.    | Parameters                      | Value   | Biological specimen | Basis                                     |
|--------------------------------|------------|---------------------------------|---------|---------------------|-------------------------------------------|
| Cobaltous nitrate, hexahydrate | 10026-22-9 | Cobalt                          | 15 µg/l | Urine               | ACGIH - Biological Exposure Indices (BEI) |
|                                | Remarks    | End of shift at end of workweek |         |                     |                                           |
|                                |            | Cobalt                          |         | Urine               | ACGIH - Biological Exposure Indices (BEI) |
|                                |            | End of shift at end of workweek |         |                     |                                           |

**8.2 Exposure controls****Appropriate engineering controls**

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

## Personal protective equipment

### Eye/face protection

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Tightly fitting safety goggles

### Skin protection

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: [www.kcl.de](http://www.kcl.de)).

Full contact

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: 480 min

Material tested: KCL 741 Dermatril® L

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: [www.kcl.de](http://www.kcl.de)).

Splash contact

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: 480 min

Material tested: KCL 741 Dermatril® L

### Body Protection

protective clothing

### Respiratory protection

required when dusts are generated.

Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

### Control of environmental exposure

Do not let product enter drains.

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## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

- |                                            |                                            |
|--------------------------------------------|--------------------------------------------|
| a) Appearance                              | Form: crystalline<br>Color: red            |
| b) Odor                                    | No data available                          |
| c) Odor Threshold                          | No data available                          |
| d) pH                                      | 4.0 at 100 g/l at 20 °C (68 °F)            |
| e) Melting point/freezing point            | Melting point/range: 55 °C (131 °F) - lit. |
| f) Initial boiling point and boiling range | No data available                          |

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|                                                 |                                                                          |
|-------------------------------------------------|--------------------------------------------------------------------------|
| g) Flash point                                  | ( )Not applicable                                                        |
| h) Evaporation rate                             | No data available                                                        |
| i) Flammability (solid, gas)                    | No data available                                                        |
| j) Upper/lower flammability or explosive limits | No data available                                                        |
| k) Vapor pressure                               | No data available                                                        |
| l) Vapor density                                | No data available                                                        |
| m) Density                                      | 1.88 g/cm <sup>3</sup>                                                   |
| Relative density                                | No data available                                                        |
| n) Water solubility                             | soluble                                                                  |
| o) Partition coefficient: n-octanol/water       | Not applicable for inorganic substances                                  |
| p) Autoignition temperature                     | No data available                                                        |
| q) Decomposition temperature                    | No data available                                                        |
| r) Viscosity                                    | No data available                                                        |
| s) Explosive properties                         | No data available                                                        |
| t) Oxidizing properties                         | The substance or mixture is classified as oxidizing with the category 2. |

## 9.2 Other safety information

No data available

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## SECTION 10: Stability and reactivity

### 10.1 Reactivity

No data available

### 10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

### 10.3 Possibility of hazardous reactions

Risk of explosion with:  
ammonium compounds  
carbon/soot  
oxidisable substances

### 10.4 Conditions to avoid

Heat. Exposure to moisture.  
no information available

### 10.5 Incompatible materials

No data available

### 10.6 Hazardous decomposition products

In the event of fire: see section 5

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## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

#### Acute toxicity

LD50 Oral - Rat - male and female - 978 mg/kg

(OECD Test Guideline 401)

Inhalation: No data available

Dermal: No data available

#### Skin corrosion/irritation

Skin - Rabbit

Result: No skin irritation - 4 h

(OECD Test Guideline 404)

Remarks: (anhydrous substance)

The value is given in analogy to the following substances: Cobalt(II) nitrate

#### Serious eye damage/eye irritation

Eyes - Rabbit

Result: Causes serious eye damage.

(OECD Test Guideline 405)

Remarks: (anhydrous substance)

The value is given in analogy to the following substances: Cobalt(II) nitrate

#### Respiratory or skin sensitization

May cause allergy or asthma symptoms or breathing difficulties if inhaled. Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2) (anhydrous substance)  
May cause allergic skin reaction. Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2) (anhydrous substance)

#### Germ cell mutagenicity

Suspected of causing genetic defects.

#### Carcinogenicity

May cause cancer by inhalation.

IARC: 2B - Group 2B: Possibly carcinogenic to humans (Cobaltous nitrate, hexahydrate)

2B - Group 2B: Possibly carcinogenic to humans (Cobaltous nitrate, hexahydrate)

NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

#### Reproductive toxicity

May damage the unborn child.

May damage fertility.

#### Specific target organ toxicity - single exposure

No data available

#### Specific target organ toxicity - repeated exposure

No data available

### Aspiration hazard

No data available

## 11.2 Additional Information

Repeated dose toxicity - Rat - male and female - Oral - 90 d - NOAEL (No observed adverse effect level) - 3 mg/kg

RTECS: QU7355500

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

Symptoms of an acute cobalt intoxication: diarrhoea, loss of appetite, drop in body temperature, drop in blood pressure. Toxic effect on kidneys (proteinuria, anuria), heart, and pancreas.

The following applies to nitrites/nitrates in general: methaemoglobinaemia after the uptake of large quantities.

somnolence

Other dangerous properties can not be excluded.

This substance should be handled with particular care.

Stomach - Irregularities - Based on Human Evidence

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## SECTION 12: Ecological information

### 12.1 Toxicity

|                                                     |                                                                                                                                                                                                                         |
|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Toxicity to fish                                    | semi-static test LC50 - Pimephales promelas (fathead minnow) - 1.866 mg/l - 96 h<br>(US-EPA)<br>Remarks: (anhydrous substance)<br>The value is given in analogy to the following substances: Cobalt(II) nitrate         |
| Toxicity to daphnia and other aquatic invertebrates | static test LC50 - Ceriodaphnia dubia (water flea) - 0.39 mg/l - 48 h<br>(US-EPA)<br>Remarks: (anhydrous substance)<br>The value is given in analogy to the following substances: Cobalt(II) nitrate                    |
| Toxicity to algae                                   | static test ErC50 - Pseudokirchneriella subcapitata - 0.095 mg/l - 72 h<br>(OECD Test Guideline 201)<br>Remarks: (anhydrous substance)<br>The value is given in analogy to the following substances: Cobalt(II) nitrate |
| Toxicity to bacteria                                | static test EC50 - activated sludge - 120 mg/l - 30 min                                                                                                                                                                 |

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(OECD Test Guideline 209)  
Remarks: (anhydrous substance)  
The value is given in analogy to the following substances: Cobalt(II)  
nitrate

#### **12.2 Persistence and degradability**

The methods for determining the biological degradability are not applicable to inorganic substances.

#### **12.3 Bioaccumulative potential**

No data available

#### **12.4 Mobility in soil**

No data available

#### **12.5 Results of PBT and vPvB assessment**

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

#### **12.6 Other adverse effects**

Discharge into the environment must be avoided.

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### **SECTION 13: Disposal considerations**

#### **13.1 Waste treatment methods**

##### **Product**

Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself. See [www.retrologistik.com](http://www.retrologistik.com) for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

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### **SECTION 14: Transport information**

#### **DOT (US)**

UN number: 1477    Class: 5.1    Packing group: II  
Proper shipping name: Nitrates, inorganic, n.o.s.  
Reportable Quantity (RQ):  
Poison Inhalation Hazard: No

#### **IMDG**

UN number: 1477    Class: 5.1    Packing group: II    EMS-No: F-A, S-Q  
Proper shipping name: NITRATES, INORGANIC, N.O.S. (Cobaltous nitrate, hexahydrate)  
Marine pollutant : yes

#### **IATA**

UN number: 1477    Class: 5.1    Packing group: II  
Proper shipping name: Nitrates, inorganic, n.o.s.

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### **SECTION 15: Regulatory information**

#### **SARA 302 Components**

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This material does not contain any components with a section 302 EHS TPQ.

### **SARA 313 Components**

The following components are subject to reporting levels established by SARA Title III, Section 313:

|                                | CAS-No.    | Revision Date |
|--------------------------------|------------|---------------|
| Cobaltous nitrate, hexahydrate | 10026-22-9 | 1993-04-24    |

### **SARA 311/312 Hazards**

Reactivity Hazard, Acute Health Hazard, Chronic Health Hazard

### **Massachusetts Right To Know Components**

No components are subject to the Massachusetts Right to Know Act.

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## **SECTION 16: Other information**

### **Further information**

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See [www.sigma-aldrich.com](http://www.sigma-aldrich.com) and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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