
SECTION 1: Identification of the substance / mixture and of the company / undertaking

Date issued 14.06.2017

1.1. Product identifier

<table>
<thead>
<tr>
<th>Product name</th>
<th>COBALT SULPHATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>REACH Reg. No.</td>
<td>01-2119517426-41-0003</td>
</tr>
<tr>
<td>CAS no.</td>
<td>10026-24-1</td>
</tr>
<tr>
<td>EC no.</td>
<td>233-334-2</td>
</tr>
<tr>
<td>Extended SDS with ES</td>
<td>Yes</td>
</tr>
</tbody>
</table>

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

Use of the substance/preparation

- Use of cobalt sulfate in the production of cobalt carbonate
- Surface treatment processes (intermediate use)
- Inorganic pigments & frits, glass and ceramic ware (intermediate use)
- Dyes for the textile, leather, wood and/or paper industry (intermediate use)
- Industrial use of cobalt sulfate in the manufacture of chemicals and in other wet-chemical processes as intermediate
- Fertilizers and/or feed grade materials
- Catalyst in synthesis processes
- Fermentation processes and/or biogas production
- Formulation and industrial use of as water treatment chemical, oxygen scavenger, corrosion inhibitor
- Manufacture and industrial use of batteries using cobalt sulfate (intermediate use)
- Professional use of fertilizers containing cobalt sulfate

Uses advised against None.

1.3. Details of the supplier of the safety data sheet

Manufacturer

<table>
<thead>
<tr>
<th>Company name</th>
<th>Norilsk Nickel Harjavalta Oy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postal address</td>
<td>Teollisuuskatu 1</td>
</tr>
<tr>
<td>Postcode</td>
<td>29200</td>
</tr>
<tr>
<td>City</td>
<td>Harjavalta</td>
</tr>
<tr>
<td>Country</td>
<td>Finland</td>
</tr>
<tr>
<td>Tel</td>
<td>+358 2 537 11</td>
</tr>
<tr>
<td>E-mail</td>
<td><a href="mailto:product.safety@nornickle.fi">product.safety@nornickle.fi</a></td>
</tr>
<tr>
<td>Enterprise no.</td>
<td>FI15917284</td>
</tr>
</tbody>
</table>

This safety data sheet has been created with Eco Publisher (EcoOnline)
1.4. Emergency telephone number

Emergency telephone
Description: 3E EH&S Mission Control Center: +44 20 35147487 / Access Code: 334656

SECTION 2: Hazards identification

2.1. Classification of substance or mixture

Classification according to Regulation (EC) No 1272/2008 [CLP / GHS]
Acute tox. 4; H302,H302
Eye Irrit. 2; H319,H319
Resp. Sens. 1A; H334,H334
Skin Sens. 1; H317,H317
Repr. 1B; H360F,H360F
Muta. 2; H341,H341
Carc. 1B; H350i,H350i
Aquatic Acute 1; H400,H400
Aquatic Chronic 1; H410,H410

2.2. Label elements

Hazard Pictograms (CLP)

<table>
<thead>
<tr>
<th>Signal word</th>
<th>Hazard statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger</td>
<td>H302 Harmful if swallowed.</td>
</tr>
<tr>
<td></td>
<td>H319 Causes serious eye irritation.</td>
</tr>
<tr>
<td></td>
<td>H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.</td>
</tr>
<tr>
<td></td>
<td>H317 May cause an allergic skin reaction.</td>
</tr>
<tr>
<td></td>
<td>H360F May damage fertility.</td>
</tr>
<tr>
<td></td>
<td>H341 Suspected of causing genetic defects</td>
</tr>
<tr>
<td></td>
<td>H350i May cause cancer by inhalation.</td>
</tr>
<tr>
<td></td>
<td>H400 Very toxic to aquatic life.</td>
</tr>
<tr>
<td></td>
<td>H410 Very toxic to aquatic life with long lasting effects.</td>
</tr>
</tbody>
</table>

Precautionary statements

P202 Do not handle until all safety precautions have been read and understood.
P261 Avoid breathing dust / fume / gas / mist / vapours / spray.
P270 Do not eat, drink or smoke when using this product.
P280 Wear protective gloves / protective clothing / eye protection / face protection.
P309+P311 IF exposed or if you feel unwell: Call a POISON CENTER or doctor / physician.
P273 Avoid release to the environment.

2.3. Other hazards

PBT / vPvB
The PBT and vPvB criteria of Annex XIII to the regulation does not apply to inorganic substances.

SECTION 3: Composition/information on ingredients

3.1. Substances

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SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation
Remove affected person from the immediate area. Ensure supply of fresh air. If breathing is irregular or stopped, administer artificial respiration. Consult a physician.

Skin contact
Wash off with soap and plenty of water. Remove soiled or soaked clothing immediately. Wash contaminated clothing before re-use.

Eye contact
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If easy to do, remove contact lens, if worn. If eye irritation persists, consult a specialist.

Ingestion
Rinse mouth. Consult a physician.

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

General symptoms and effects
- If inhaled: Cough; Shortness of breath
- If swallowed: Vomiting; Abdominal pain
- Eyes / Skin: Redness
- If symptoms persist, call a physician. Treat symptomatically.

4.3. Indication of any immediate medical attention and special treatment needed

Medical treatment
None.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media
- The product itself does not burn.
  - Powder. Carbon dioxide (CO2). Water spray.

Improper extinguishing media
None.

5.2. Special hazards arising from the substance or mixture

Fire and explosion hazards
In case of fire, toxic gases may be formed. Sulphurous gases (SOx). Cobalt oxides

5.3. Advice for firefighters

Personal protective equipment
Use personal protective equipment as required.

Other Information
Collect contaminated fire extinguishing water separately. Do not discharge into the drains/surface waters/groundwater.

SECTION 6: Accidental release measures
6.1. Personal precautions, protective equipment and emergency procedures

General measures
Avoid contact with skin, eyes and clothing. Ensure adequate ventilation. Avoid dust formation. Avoid breathing dust.

6.2. Environmental precautions

Environmental precautionary measures
Do not allow to enter drains, sewers or watercourses.

6.3. Methods and material for containment and cleaning up

Other information
Send in suitable containers for recovery or disposal.

6.4. Reference to other sections

Other instructions
See also section 7, 8, 13

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Handling
Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work. Avoid inhalation of dust and contact with skin and eyes. Use mechanical ventilation in case of handling which causes formation of dust. Avoid spread of dust.

Protective Safety Measures

Advice on general occupational hygiene
Private clothes and working clothes should be kept separately.

7.2. Conditions for safe storage, including any incompatibilities

Storage
Store in tightly closed original container in a dry, cool and well-ventilated place.

Conditions to avoid
Keep away from Strong oxidizing agents.

7.3. Specific end use(s)

Specific use(s)
Industrial use; professional use

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

<table>
<thead>
<tr>
<th>Substance</th>
<th>Identification</th>
<th>Value</th>
<th>TWA Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cobalt and its inorganic</td>
<td>TWA (8h): 0.02 mg/m³</td>
<td>TWA Year: 2012</td>
<td></td>
</tr>
<tr>
<td>compounds*</td>
<td></td>
<td><strong>Exposure Limit Letter</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Letter description:</strong> Co</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Source:</strong> HTP Finland</td>
<td></td>
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</tbody>
</table>

DNEL / PNEC

<table>
<thead>
<tr>
<th>Substance</th>
<th>Cobalt sulphate heptahydrate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group:</strong> Consumer</td>
<td></td>
</tr>
<tr>
<td><strong>Route of exposure:</strong> Long-term inhalation (local)</td>
<td></td>
</tr>
<tr>
<td><strong>Value:</strong> 16.6 µg/m³</td>
<td></td>
</tr>
<tr>
<td><strong>Group:</strong> Professional</td>
<td></td>
</tr>
<tr>
<td><strong>Route of exposure:</strong> Long-term inhalation (local)</td>
<td></td>
</tr>
</tbody>
</table>
8.2. Exposure controls

Precautionary measures to prevent exposure

Product-related measures to prevent exposure
Avoid contact with skin and eyes. Do not breathe dust.

Eye / face protection

Suitable Eye Protection
Wear tight-fitting goggles or face shield.

Hand protection

Suitable gloves type
Wear protective gloves. Avoid prolonged skin contact.
Suitable materials
Butyl rubber. Polyvinyl chloride (PVC).

Skin protection

Suitable protective clothing
Wear appropriate clothing to prevent reasonably probable skin contact. Wear special protective clothing.

Respiratory protection

Recommended type of equipment
Use respiratory equipment with particle filter, type P3.

Hygiene / environmental

Specific hygiene measures
Wash contaminated clothing before reuse. Personal protection must be kept separate from other clothes. When using do not eat, drink or smoke.

Appropriate environmental exposure control

Environmental exposure controls
The employer shall fulfill requirements of IPPC Directive.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state
Crystals or crystalline.
<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>Red.</td>
</tr>
<tr>
<td>Odour</td>
<td>Odourless.</td>
</tr>
<tr>
<td>Odour limit</td>
<td>Comments: Not relevant.</td>
</tr>
<tr>
<td>pH</td>
<td>Status: In delivery state</td>
</tr>
<tr>
<td></td>
<td>Comments: 5.11 (100 g/l)</td>
</tr>
<tr>
<td>Melting point / melting range</td>
<td>Comments: 96.8°C CoSO₄ · 7H₂O</td>
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<tr>
<td>Boiling point / boiling range</td>
<td>Comments: Not relevant.</td>
</tr>
<tr>
<td>Flash point</td>
<td>Comments: Not relevant.</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Comments: Not relevant.</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>does not ignite</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>Comments: No data available.</td>
</tr>
<tr>
<td>Vapour density</td>
<td>Comments: No data available.</td>
</tr>
<tr>
<td>Density</td>
<td>Value: 1.948 g/cm³</td>
</tr>
<tr>
<td></td>
<td>Comments: (CoSO₄ · 7H₂O)</td>
</tr>
<tr>
<td>Solubility</td>
<td>Medium: Water</td>
</tr>
<tr>
<td></td>
<td>Value: 376,7 g/l</td>
</tr>
<tr>
<td></td>
<td>Temperature: 20 °C</td>
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<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>Comments: Not applicable.</td>
</tr>
<tr>
<td>Spontaneous combustability</td>
<td>Comments: Not applicable.</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>Comments: No data available.</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Comments: Not applicable. Solid</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>Not explosive</td>
</tr>
<tr>
<td>Oxidising properties</td>
<td>no oxidizing</td>
</tr>
</tbody>
</table>

9.2. Other information

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity

No specific reactivity hazards associated with this product.

10.2. Chemical stability

Stability

Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions

No dangerous reaction known under conditions of normal use.

10.4. Conditions to avoid

Conditions to avoid

Heat.

10.5. Incompatible materials

Materials to avoid

Strong oxidizing agents

10.6. Hazardous decomposition products
SECTION 11: Toxicological information

11.1. Information on toxicological effects

Other information regarding health hazards

Assessment of acute toxicity classification
LD50/oral/rat = 768 mg/kg

Assessment of skin corrosion / irritation, classification
Not classified as Corrosive. Causes serious eye irritation.

Sensitisation
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause an allergic skin reaction.

Mutagenicity
Suspected of causing genetic defects.

Carcinogenicity
May cause cancer by inhalation. Animal experiments showed a statistically significant number of tumours. Concentration 0,3 mg/m3

Reproductive toxicity
May damage fertility

Assessment of specific target organ toxicity RE, classification
No data available.

Aspiration hazard, comments
Not relevant.

SECTION 12: Ecological information

12.1. Toxicity

Ecotoxicity
LC50/96t/mutu (Fathead minnows) = 3.61 mg/L (CoSO4)
LC50/96h/Salmo gairdneri: 1.5 mg/l (CoCl2)
NOEC: 351.4 mg/L (Fresh water, fish) (Chemical Safety Report)
NOEC: 31802 mg/L (Sea water, fish) (Chemical Safety Report)
EC/LC50: 0.61 mg/L (Fresh water, Invertebrates) (Chemical Safety Report)
EC/LC50: 2.23 mg/L (Sea water, Invertebrates) (Chemical Safety Report)

12.2. Persistence and degradability

Persistence and degradability
No data available.

12.3. Bioaccumulative potential

Bioaccumulative potential
Cobalt
- Water plants BCF: > 100 – 5000
- Invertebrates, Water BCF < 300
- Fresh water BCF/BAF : <10
- Sea water BCF/BAF : <10

12.4. Mobility in soil

Mobility
No data available.

12.5. Results of PBT and vPvB assessment

PBT assessment results
The PBT and vPvB criteria of Annex XIII to the regulation does not apply to inorganic substances.
12.6. Other adverse effects

<table>
<thead>
<tr>
<th>Other adverse effects</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>no data available</td>
</tr>
</tbody>
</table>

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Specify the appropriate methods of disposal

Contaminated packaging should be emptied as far as possible. Packaging that cannot be cleaned should be disposed as special waste in compliance with local and national regulations.

Other Information

Contact manufacturer. Dispose of as special waste in compliance with local and national regulations.

SECTION 14: Transport information

14.1. UN number

Comments

UN3077

14.2. UN proper shipping name

Comments

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Cobalt sulphate)

14.3. Transport hazard class(es)

Class Code IMDG

9

14.4. Packing group

Comments

III

14.5. Environmental hazards

Comments

Environmentally hazardous substance – marine pollutant

14.6. Special precautions for user

Special safety precautions for user

None. Tunnel restriction code (-)

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Transport In Bulk Value

(Yes/No)

No

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Legislation and regulations

Candidate list: Cobalt sulphate EC no 233-334-2 http://echa.europa.eu/web/guest/candidate-list-table

15.2. Chemical safety assessment

Chemical safety assessment performed

Yes
### SECTION 16: Other information

| List of relevant H-phrases (Section 2 and 3) | H302 Harmful if swallowed.  
H317 May cause an allergic skin reaction.  
H319 Causes serious eye irritation.  
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
H341 Suspected of causing genetic defects  
H350i May cause cancer by inhalation.  
H360F May damage fertility.  
H400 Very toxic to aquatic life.  
H410 Very toxic to aquatic life with long lasting effects. |
| Classification according to Regulation (EC) No 1272/2008 [CLP / GHS] | Acute tox. 4; H302,H302  
Eye Irrit. 2; H319,H319  
Resp. Sens. 1A; H334,H334  
Skin Sens. 1; H317,H317  
Repr. 1B; H360F,H360F  
Muta. 2; H341,H341  
Carc. 1B; H350i,H350i  
Aquatic Acute 1; H400,H400  
Aquatic Chronic 1; H410,H410 |
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| Key literature references and sources for data | Chemical Safety Report |
| Exposure scenario | [ES_0_COBALT_SULPHATE [FI-FIN].pdf] |