MATERIAL SAFETY DATA SHEET
Cobalt(II) Chloride Hexahydrate

Section 1 - Chemical Product and Company Identification

MSDS Name: Cobalt(II) Chloride Hexahydrate
Synonyms: Cobaltous chloride hexahydrate; Cobalt muriate hexahydrate.
Company Identification: Fisher Scientific UK
Bishop Meadow Road, Loughborough
Leics. LE11 5RG
For information in Europe, call: (01509) 231166
Emergency Number, Europe: 01509 231166

Section 2 - Composition, Information on Ingredients

<table>
<thead>
<tr>
<th>CAS#</th>
<th>Chemical Name</th>
<th>%</th>
<th>EINECS#</th>
<th>Hazard Symbols</th>
<th>Risk Phrases</th>
</tr>
</thead>
<tbody>
<tr>
<td>7791-13-1</td>
<td>Cobalt(II) chloride hexahydrate</td>
<td>100</td>
<td>unlisted</td>
<td>T N</td>
<td>49 22 42/43 50/53</td>
</tr>
</tbody>
</table>

Text for R-phrases: see Section 16

Hazard Symbols: T N

Risk Phrases: 49 22 42/43 50/53

Section 3 - Hazards Identification

EMERGENCY OVERVIEW
Harmful if swallowed. May cause sensitization by inhalation and skin contact. May cause cancer by inhalation. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Dangerous for the environment.

Potential Health Effects
Eye: Causes eye irritation and possible burns.
Skin: May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material. Causes skin irritation and possible burns.
Ingestion: May interfere with blood clotting. May cause thyroid abnormalities. Causes digestive tract irritation with possible burns.
Inhalation: Causes delayed lung injury. May cause asthmatic attacks due to allergic sensitization of the respiratory tract. May cause asthma and shortness of breath. Causes respiratory tract irritation with possible burns.
Chronic: Cobalt compounds may cause cancer based upon animal studies. Adverse reproductive effects have been reported in animals.

Section 4 - First Aid Measures

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
Skin: Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

Ingestion: Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid.

Inhalation: Remove from exposure and move to fresh air immediately. If breathing is difficult, give oxygen. Get medical aid. Do NOT use mouth-to-mouth resuscitation.

Notes to Physician:

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Non-combustible, substance itself does not burn but may decompose upon heating to produce irritating, corrosive and/or toxic fumes.

Extinguishing Media: Substance is noncombustible; use agent most appropriate to extinguish surrounding fire.

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Provide ventilation.

Section 7 - Handling and Storage

Handling: Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with skin and eyes. Keep container tightly closed. Avoid ingestion and inhalation.

Storage: Store in a cool, dry, well-ventilated area away from incompatible substances.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Exposure Limits

CAS# 7646-79-9:

United Kingdom, WEL - TWA: (cobalt compounds): 0.1 mg/m³ TWA (as Co)
United Kingdom, WEL - STEL: (cobalt compounds): 0.3 mg/m³ STEL (as Co)

Japan: (cobalt compounds): 0.05 mg/m³ OEL (as Co)
Malaysia: (cobalt, inorganic compounds): 0.02 mg/m³ TWA (as Co)
Russia: (cobalt, inorganic compounds): 0.01 mg/m³ TWA (aerosol) Russia: (cobalt, inorganic compounds): 0.05 mg/m³ STEL (aerosol)
Spain: (cobalt, inorganic compounds): 0.02 mg/m³ VLA-ED (as Co)

CAS# 7791-13-1:

United Kingdom, WEL - TWA: (cobalt compounds): 0.1 mg/m³ TWA (as Co)
United Kingdom, WEL - STEL: (cobalt compounds): 0.3 mg/m³ STEL (as Co)

Japan: (cobalt compounds): 0.05 mg/m³ OEL (as Co)
Malaysia: (cobalt, inorganic compounds): 0.02 mg/m³ TWA (as Co)
Russia: (cobalt, inorganic compounds): 0.01 mg/m³ TWA (aerosol) Russia: (cobalt, inorganic compounds): 0.05 mg/m³ STEL (aerosol)
Spain: (cobalt, inorganic compounds): 0.02 mg/m³ VLA-ED (as Co)

**Personal Protective Equipment**

**Eyes:** 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:** Wear appropriate gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.

**Respirators:** 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.

### Section 9 - Physical and Chemical Properties

**Physical State:** Solid  
**Color:** purple  
**Odor:** none reported  
**pH:** 4.6 @ M solution.  
**Vapor Pressure:** Negligible.  
**Viscosity:** Not available  
**Boiling Point:** 1048.9 deg C (1,920.02°F)  
**Freezing/Melting Point:** 87 deg C (188.60°F)  
**Autoignition Temperature:** Not available.  
**Flash Point:** Noncombustible.  
**Explosion Limits: Lower:** Not available  
**Explosion Limits: Upper:** Not available  
**Decomposition Temperature:**

- **Solubility in water:** 77 g/100ml (0 °C)
- **Specific Gravity/Density:** 1.924
- **Molecular Formula:** CoCl₂.6H₂O
- **Molecular Weight:** 237.9196

### Section 10 - Stability and Reactivity

**Chemical Stability:** Stable at room temperature in closed containers under normal storage and handling conditions.

**Conditions to Avoid:** Dust generation, moisture, excess heat.

**Incompatibilities with Other Materials**

- Not available

**Hazardous Decomposition Products**

- Hydrogen chloride, cobalt/cobalt oxides.

**Hazardous Polymerization**

- Has not been reported.

### Section 11 - Toxicological Information

**RTECS#:**
- CAS# 7646-79-9: GF9800000  
- CAS# 7791-13-1: GG0200000

**LD50/LC50:**

- **RTECS:**
  - CAS# 7646-79-9: Oral, mouse: LD50 = 80 mg/kg;  
  - Oral, rat: LD50 = 80 mg/kg;  
  - Oral, rat: LD50 = 418 mg/kg;  
  - Skin, rat: LD50 = >2 gm/kg;
Section 12 - Ecological Information

Not available

Section 13 - Disposal Considerations

Products considered hazardous for supply are classified as Special Waste and the disposal of such chemicals is covered by regulations which may vary according to location. Contact a specialist disposal company or the local authority or advice. Empty containers must be decontaminated before returning for recycling.

Section 14 - Transport Information

<table>
<thead>
<tr>
<th>IATA</th>
<th>IMO</th>
<th>RID/ADR</th>
</tr>
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<tbody>
<tr>
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<td>UN Number:</td>
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<tr>
<td>Packing Group:</td>
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</table>

Section 15 - Regulatory Information

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: T N

Risk Phrases:
- R 49 May cause cancer by inhalation.
- R 22 Harmful if swallowed.
- R 42/43 May cause sensitization by inhalation and skin contact.
- R 50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety Phrases:
- S 53 Avoid exposure - obtain special instructions before use.
- S 22 Do not breathe dust.
- S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
- S 60 This material and its container must be disposed of as hazardous waste.
- S 61 Avoid release to the environment. Refer to special instructions/safety data sheets.

WGK (Water Danger/Protection)

CAS# 7646-79-9: 2
CAS# 7791-13-1: 2

Canada

CAS# 7646-79-9 is listed on Canada's DSL List

US Federal

TSCA

CAS# 7646-79-9 is listed on the TSCA Inventory.

Carcinogenicity: Cobalt dichloride anhydrous - IARC: Group 2B carcinogen
Cobalt(II) chloride hexahydrate - IARC: Group 2B carcinogen

Other: See actual entry in RTECS for complete information.

Other: Reproductive hazard: Mouse: Oral Dose: 182 mg/kg (13 Weeks, Male) Paternal effects: Testes, epididymis, sperm duct.
CAS# 7791-13-1 is not on the TSCA Inventory because it is a hydrate. It is considered to be listed if the CAS number for the anhydrous form is on the Inventory (40CFR720.3(u)(2)).

Section 16 - Other Information

Text for R-phrases from Section 2

R 22 Harmful if swallowed.
R 42/43 May cause sensitization by inhalation and skin contact.
R 49 May cause cancer by inhalation.
R 51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

MSDS Creation Date: 12/12/1997
Revision #15 Date: 11/13/2007
Revisions were made in Sections: 14

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