Material Safety Data Sheet

1. PRODUCT AND COMPANY IDENTIFICATION

**Product Name**
Cobalt(II) chloride hexahydrate
AC423570000; AC423570050; AC423571000; AC423575000
Cobalt muriate hexahydrate.; Cobaltous chloride hexahydrate

**Recommended Use**
Laboratory chemicals

**Company**
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel. (201) 796-7100

**Entity / Business Name**
Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

**Emergency Telephone Number**
For information in the US, call: 800-ACROS-01
For information in Europe, call: +32 14 57 52 11

Emergency Number, Europe: +32 14 57 52 99
Emergency Number, US: 201-796-7100

CHEMTREC Phone Number, US: 800-424-9300
CHEMTREC Phone Number, Europe: 703-527-3887

2. HAZARDS IDENTIFICATION

**DANGER!**
Possible cancer hazard. May cause cancer based on animal data. May cause cancer by inhalation. Causes burns by all exposure routes. Harmful if swallowed. May cause allergic respiratory and skin reaction. May impair fertility. Possible risks of irreversible effects. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**Appearance**
Reddish-violet

**Physical State**
Powder

**Odor**
odorless

**Target Organs**
Skin, Respiratory system, Eyes, Gastrointestinal tract (GI), Liver, Kidney, Blood, Heart, Reproductive System
Potential Health Effects

Acute Effects
Principle Routes of Exposure

- **Eyes**: Causes burns.
- **Skin**: Causes burns. May be harmful in contact with skin. May produce an allergic reaction.
- **Inhalation**: Causes burns. May be harmful if inhaled. May cause allergic respiratory reaction.
- **Ingestion**: Causes burns. Harmful if swallowed.

Chronic Effects
Possible cancer hazard based on tests with laboratory animals. Experiments have shown reproductive toxicity effects on laboratory animals. Tumorigenic effects have been reported in experimental animals. May cause adverse liver effects. May cause adverse kidney effects. May cause adverse cardiac effects.

See Section 11 for additional Toxicological information.

Aggravated Medical Conditions
No information available.

### 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) chloride, hexahydrat</td>
<td>7791-13-1</td>
<td>&gt;95</td>
</tr>
<tr>
<td>Cobaltous chloride</td>
<td>7646-79-9</td>
<td></td>
</tr>
</tbody>
</table>

### 4. FIRST AID MEASURES

- **Eye Contact**: Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.
- **Skin Contact**: Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.
- **Inhalation**: Move to fresh air. If breathing is difficult, give oxygen. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with a respiratory medical device. Immediate medical attention is required.
- **Ingestion**: Do not induce vomiting. Call a physician or Poison Control Center immediately.
- **Notes to Physician**: Treat symptomatically.

### 5. FIRE-FIGHTING MEASURES

- **Flash Point Method**: Not applicable
- **Autoignition Temperature**: No information available.
- **Explosion Limits**
  - **Upper**: No data available
  - **Lower**: No data available
- **Suitable Extinguishing Media**: Substance is nonflammable; use agent most appropriate to extinguish surrounding fire..
Unsuitable Extinguishing Media
No information available.

Hazardous Combustion Products
No information available.

Sensitivity to mechanical impact
No information available.

Sensitivity to static discharge
No information available.

Specific Hazards Arising from the Chemical
Keep product and empty container away from heat and sources of ignition. Thermal decomposition can lead to release of irritating gases and vapors.

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.

NFPA Health 3 Flammability 0 Instability 0 Physical hazards N/A

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions
Use personal protective equipment. Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Evacuate personnel to safe areas. Avoid dust formation. Do not get in eyes, on skin, or on clothing.

Environmental Precautions
Should not be released into the environment.

Methods for Containment and Clean Up
Sweep up or vacuum up spillage and collect in suitable container for disposal. Avoid dust formation.

7. HANDLING AND STORAGE

Handling
Use only under a chemical fume hood. Wear personal protective equipment. Do not get in eyes, on skin, or on clothing. Avoid dust formation. Do not breathe dust.

Storage
Keep containers tightly closed in a dry, cool and well-ventilated place. Corrosives area.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

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

Exposure Guidelines
This product does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

NIOSH IDLH: Immediately Dangerous to Life or Health

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.
9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State
Appearance
Odor
Odor Threshold
pH
Vapor Pressure
Vapor Density
Viscosity
Boiling Point/Range
Melting Point/Range
Decomposition temperature °C
Flash Point
Evaporation Rate
Specific Gravity
Solubility
log Pow
Molecular Weight
Molecular Formula

Powder
Reddish-violet
odorless
No information available.
4.9 50 g/l aq.sol.
negligible
No information available.
No information available.
86°C / 186.8°F
>120
Not applicable
negligible
No information available.
Soluble in water
No data available
237.93
Cl2 Co . 6 H2 O

10. STABILITY AND REACTIVITY

Stability
Conditions to Avoid
Incompatible Materials
Hazardous Decomposition Products
Hazardous Polymerization
Hazardous Reactions .

Stable under normal conditions.
Strong oxidizing agents, Metals
Hydrogen chloride gas. Thermal decomposition can lead to release of irritating gases and vapors
No information available.
None under normal processing.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Component Information

<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) chloride, hexahydrate</td>
<td>766 mg/kg</td>
<td>2 g/kg</td>
<td>Not listed</td>
</tr>
<tr>
<td></td>
<td>( Rat )</td>
<td>( Rat )</td>
<td></td>
</tr>
<tr>
<td>Cobaltic chloride</td>
<td>80 mg/kg</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
<tr>
<td></td>
<td>( Rat )</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Irritation

Causes burns by all exposure routes
Toxicologically Synergistic Products

No information available.

Chronic Toxicity

Carcinogenicity

The table below indicates whether each agency has listed any ingredient as a carcinogen.

<table>
<thead>
<tr>
<th>Component</th>
<th>ACGIH</th>
<th>IARC</th>
<th>NTP</th>
<th>OSHA</th>
<th>Mexico</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cobalt (II) chloride, hexahydrate</td>
<td>Not listed</td>
<td>Group 2B</td>
<td>Not listed</td>
<td>X</td>
<td>Not listed</td>
</tr>
<tr>
<td>Cobaltous chloride</td>
<td>Not listed</td>
<td>Group 2B</td>
<td>Not listed</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

Sensitization

May cause sensitization by inhalation and skin contact

Mutagenic Effects

Mutagenic effects have occurred in humans. Possible risk of irreversible effects

Reproductive Effects

Experiments have shown reproductive toxicity effects on laboratory animals. May impair fertility.

Developmental Effects

Developmental effects have occurred in experimental animals.

Teratogenicity

Teratogenic effects have occurred in experimental animals.

Other Adverse Effects

Tumorigenic effects have been reported in experimental animals. See actual entry in RTECS for complete information.

Endocrine Disruptor Information

No information available

12. ECOLOGICAL INFORMATION

Ecotoxicity

Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

<table>
<thead>
<tr>
<th>Component</th>
<th>Freshwater Algae</th>
<th>Freshwater Fish</th>
<th>Microtox</th>
<th>Water Flea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cobalt (II) chloride, hexahydrate</td>
<td>Not listed</td>
<td>Not listed</td>
<td>$= 16 \text{ mg/L EC50}$</td>
<td>Not listed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Photobacterium phosphoreum 15 min as Co++</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>$= 160 \text{ mg/L EC50}$</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Photobacterium phosphoreum 5 min as Co++</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>$= 2.8 \text{ mg/L EC50}$</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Photobacterium phosphoreum 30 min as Co++</td>
<td></td>
</tr>
</tbody>
</table>

Persistence and Degradability

No information available

Bioaccumulation/Accumulation

No information available

Mobility

No information available
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

<table>
<thead>
<tr>
<th>UN-No</th>
<th>UN3260</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proper Shipping Name</td>
<td>CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S.</td>
</tr>
<tr>
<td>Proper technical name</td>
<td>(COBALT (II) CHLORIDE)</td>
</tr>
<tr>
<td>Hazard Class</td>
<td>8</td>
</tr>
<tr>
<td>Packing Group</td>
<td>II</td>
</tr>
</tbody>
</table>

TDG

<table>
<thead>
<tr>
<th>UN-No</th>
<th>UN3260</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proper Shipping Name</td>
<td>CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S.</td>
</tr>
<tr>
<td>Hazard Class</td>
<td>8</td>
</tr>
<tr>
<td>Packing Group</td>
<td>II</td>
</tr>
</tbody>
</table>

IATA

<table>
<thead>
<tr>
<th>UN-No</th>
<th>UN3260</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proper Shipping Name</td>
<td>CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S.</td>
</tr>
<tr>
<td>Hazard Class</td>
<td>8</td>
</tr>
<tr>
<td>Packing Group</td>
<td>II</td>
</tr>
</tbody>
</table>

IMDG/IMO

<table>
<thead>
<tr>
<th>UN-No</th>
<th>UN3260</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proper Shipping Name</td>
<td>CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S.</td>
</tr>
<tr>
<td>Hazard Class</td>
<td>8</td>
</tr>
<tr>
<td>Packing Group</td>
<td>II</td>
</tr>
</tbody>
</table>

15. REGULATORY INFORMATION

International Inventories

<table>
<thead>
<tr>
<th>Component</th>
<th>TSCA</th>
<th>DSL</th>
<th>NDSL</th>
<th>EINECS</th>
<th>ELINCS</th>
<th>NLP</th>
<th>PICCS</th>
<th>ENCS</th>
<th>AICS</th>
<th>CHINA</th>
<th>KECL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cobalt (II) chloride, hexahydrate</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cobaltous chloride</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>231-589-4</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>KE-06095</td>
<td>X</td>
</tr>
</tbody>
</table>
Legend:
X - Listed
E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
P - Indicates a commenced PMN substance
R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base
Production and Site Reports (40 CFR 712(B)).
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) Not applicable

SARA 313
Not applicable

SARA 311/312 Hazardous Categorization
   Acute Health Hazard: Yes
   Chronic Health Hazard: Yes
   Fire Hazard: No
   Sudden Release of Pressure Hazard: No
   Reactive Hazard: No

Clean Water Act
Not applicable

Clean Air Act
Not applicable

OSHA
Not applicable

CERCLA
Not Applicable

California Proposition 65
This product does not contain any Proposition 65 chemicals.

State Right-to-Know
Not applicable

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

Canada
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

WHMIS Hazard Class
- D1B Toxic materials
- D2A Very toxic materials
- D2B Toxic materials
- E Corrosive material

16. OTHER INFORMATION

Prepared By
Regulatory Affairs
Thermo Fisher Scientific
Tel: (412) 490-8929

Creation Date
13-Nov-2009

Print Date
21-Dec-2009

Revision Summary
****, and red text indicates revision

Disclaimer
The information provided on 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 guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as 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 material or in any process, unless specified in the text.

End of MSDS