

## Material Safety Data Sheet

Date Printed: 16/DEC/2004

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Version 1.4

According to 91/155/EEC

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1 - Product and Company Information

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Product Name	COBALT(II) CHLORIDE, ANHYDROUS, BEADS, -10 MESH, 99.999%
Product Number	409332
Company	Sigma-Aldrich Pte Ltd #08-01 Citilink Warehouse Singapore 118529 Singapore
Technical Phone #	65 271 1089
Fax	65 271 1571

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2 - Composition/Information on Ingredients

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Product Name	CAS #	EC no	Annex I Index Number
COBALT CHLORIDE	7646-79-9	231-589-4	027-004-00-5
Formula	CoCl <sub>2</sub>		
Molecular Weight	129.84 AMU		
Synonyms	Cobalt chloride * Cobalt dichloride * Cobalt muriate * Cobaltous chloride * Cobaltous dichloride * Dichlorocobalt * Kobalt chlorid (German)		

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3 - Hazards Identification

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## SPECIAL INDICATION OF HAZARDS TO HUMANS AND THE ENVIRONMENT

May cause cancer by inhalation. Harmful if swallowed. May cause sensitization by inhalation and skin contact. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.  
Carc. Cat.2

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4 - First Aid Measures

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## AFTER INHALATION

If inhaled, remove to fresh air. If breathing becomes difficult, call a physician.

## AFTER SKIN CONTACT

In case of contact, immediately wash skin with soap and copious amounts of water.

## AFTER EYE CONTACT

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

## AFTER INGESTION

If swallowed, wash out mouth with water provided person is

conscious. Call a physician.

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## 5 - Fire Fighting Measures

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### EXTINGUISHING MEDIA

Suitable: Use extinguishing media appropriate to surrounding fire conditions. Carbon dioxide, dry chemical powder, or appropriate foam.

### SPECIAL RISKS

Specific Hazard(s): Emits toxic fumes under fire conditions.

### SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

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## 6 - Accidental Release Measures

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PERSONAL PRECAUTION PROCEDURES TO BE FOLLOWED IN CASE OF LEAK OR SPILL  
Evacuate area.

### PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves. Wear disposable coveralls and discard them after use.

### METHODS FOR CLEANING UP

Sweep up, place in a bag and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.

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## 7 - Handling and Storage

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### HANDLING

Directions for Safe Handling: Do not breathe dust. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

### STORAGE

Conditions of Storage: Keep tightly closed.

SPECIAL REQUIREMENTS: Handle and store under inert gas.  
Hygroscopic.

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## 8 - Exposure Controls / Personal Protection

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### ENGINEERING CONTROLS

Use only in a chemical fume hood. Safety shower and eye bath.

### GENERAL HYGIENE MEASURES

Wash contaminated clothing before reuse. Wash thoroughly after handling. Discard contaminated shoes.

### EXPOSURE LIMITS - NORWAY

Source	Type	Value
	OEL	0.02 mg/m3

Remarks: KRA

### PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection: Government approved respirator in nonventilated areas and/or for exposure above the TLV or PEL.  
Hand Protection: Compatible chemical-resistant gloves.  
Eye Protection: Chemical safety goggles.

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## 9 - Physical and Chemical Properties

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Appearance	Physical State: Solid	
Property	Value	At Temperature or Pressure
pH	N/A	
BP/BP Range	N/A	
MP/MP Range	740 °C	
Flash Point	N/A	
Flammability	N/A	
Autoignition Temp	N/A	
Oxidizing Properties	N/A	
Explosive Properties	N/A	
Explosion Limits	N/A	
Vapor Pressure	40 mmHg	770 °C
SG/Density	3.37 g/cm3	
Partition Coefficient	N/A	
Viscosity	N/A	
Vapor Density	N/A	
Saturated Vapor Conc.	N/A	
Evaporation Rate	N/A	
Bulk Density	N/A	
Decomposition Temp.	N/A	
Solvent Content	N/A	
Water Content	< 2 %	
Surface Tension	N/A	
Conductivity	N/A	
Miscellaneous Data	N/A	
Solubility	N/A	

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## 10 - Stability and Reactivity

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### STABILITY

Stable: Stable.

Conditions of Instability: Absorbs ammonia from air

Conditions to Avoid: Moisture.

Materials to Avoid: Oxidizing agents, Alkali metals.

### HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Hydrogen chloride gas.

### HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

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## 11 - Toxicological Information

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RTECS NUMBER: GF9800000

### ACUTE TOXICITY

LDLO

Oral

Child

1500 mg/kg

LD50

Oral

Rat

80 mg/kg

LD50  
Intraperitoneal  
Rat  
17402 UG/KG

LD50  
Intravenous  
Rat  
4300 UG/KG  
Remarks: Behavioral:Somnolence (general depressed activity).  
Behavioral:Convulsions or effect on seizure threshold.

LD50  
Oral  
Mouse  
80 mg/kg

LD50  
Intraperitoneal  
Mouse  
49 MG/KG

LD50  
Intravenous  
Mouse  
23300 UG/KG  
Remarks: Behavioral:Somnolence (general depressed activity).  
Behavioral:Convulsions or effect on seizure threshold.

LD50  
Oral  
Guinea pig  
55 mg/kg

#### SENSITIZATION

Respiratory: May cause allergic respiratory reaction.  
Skin: May cause allergic skin reaction.

#### SIGNS AND SYMPTOMS OF EXPOSURE

Large amounts of cobalt(II) chloride depress erythrocyte production which may lead to death in children. Inhalation may result in spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis, and pulmonary edema. Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting. Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin.

#### ROUTE OF EXPOSURE

Skin Contact: May cause skin irritation.  
Skin Absorption: May be harmful if absorbed through the skin.  
Eye Contact: May cause eye irritation.  
Inhalation: May be harmful if inhaled. Material may be irritating to mucous membranes and upper respiratory tract.  
Ingestion: Harmful if swallowed.

#### TARGET ORGAN INFORMATION

Thyroid. Heart. Male reproductive system. Blood. Kidneys.  
Pancreas.

#### CHRONIC EXPOSURE - CARCINOGEN

Result: This product is or contains a component that has been

reported to be probably carcinogenic based on its IARC, OSHA, ACGIH, NTP, or EPA classification.

Rat

Route of Application: Subcutaneous

Exposure Time: 19D

Result: Tumorigenic: Carcinogenic by RTECS criteria.

Tumorigenic: Tumors at site of application.

#### IARC CARCINOGEN LIST

Rating: Group 2B

#### CHRONIC EXPOSURE - MUTAGEN

Human

1 MMOL/L

Cell Type: HeLa cell

DNA inhibition

Hamster

200 UMOL/L

Cell Type: Embryo

Unscheduled DNA synthesis

Hamster

200 UMOL/L

Cell Type: lung

Mutation in mammalian somatic cells.

Mammal

750 UMOL/L

Cell Type: lymphocyte

DNA damage

#### CHRONIC EXPOSURE - TERATOGEN

Species: Mouse

Dose: 25 MG/KG

Route of Application: Intraperitoneal

Exposure Time: (10D PREG)

Result: Specific Developmental Abnormalities: Craniofacial (including nose and tongue).

#### CHRONIC EXPOSURE - REPRODUCTIVE HAZARD

Species: Rat

Dose: 11 MG/KG

Route of Application: Oral

Exposure Time: (1-22D PREG)

Result: Effects on Fertility: Pre-implantation mortality (e.g., reduction in number of implants per female; total number of implants per corpora lutea).

Species: Rat

Dose: 30 GM/KG

Route of Application: Intraperitoneal

Exposure Time: (15-16D PREG)

Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).  
Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

Species: Mouse  
Dose: 7280 MG/KG  
Route of Application: Oral  
Exposure Time: (13W MALE)  
Result: Paternal Effects: Spermatogenesis (including genetic material, sperm morphology, motility, and count). Paternal Effects: Testes, epididymis, sperm duct. Effects on Fertility: Male fertility index (e.g., # males impregnating females per # males exposed to fertile nonpregnant females).  
CMR CAT.: Carc. Cat.2

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## 12 - Ecological Information

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N/A

### ECOTOXICOLOGICAL EFFECTS

Test Type: EC50 Algae  
Species: *Chlorella vulgaris*  
Time: 96 h  
Value: 0.52 mg/l

Test Type: EC50 Daphnia  
Species: *Daphnia magna*  
Time: 48 h  
Value: 1.1 - 1.60 mg/l

Test Type: LC50 Fish  
Species: *Cyprinus carpio*  
Time: 96 h  
Value: 0.33 mg/l

Test Type: LC50 Fish  
Species: *Onchorhynchus mykiss* (Rainbow trout)  
Time: 96 h  
Value: 1.4 mg/l

Test Type: LC50 Fish  
Species: *Pimephales promelas* (Fathead minnow)  
Time: 96 h  
Value: 22 mg/l

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## 13 - Disposal Considerations

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### SUBSTANCE DISPOSAL

Contact a licensed professional waste disposal service to dispose of this material. Observe all federal, state, and local environmental regulations.

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## 14 - Transport Information

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### RID/ADR

UN#: 3260  
Class: 8  
PG: II  
Proper Shipping Name: Corrosive solid, acidic, inorganic, n.o.s.

### IMDG

UN#: 3260  
Class: 8  
PG: II

Proper Shipping Name: CORROSIVE SOLID, ACIDIC,  
INORGANIC, N.O.S.  
Marine Pollutant: Yes  
Severe Marine Pollutant: No  
Technical Name: Required

#### IATA

UN#: 3260  
Class: 8  
PG: II  
Proper Shipping Name: Corrosive solid, acidic,  
inorganic, n.o.s.  
Inhalation Packing Group I: No  
Technical Name: Required

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#### 15 - Regulatory Information

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##### CLASSIFICATION AND LABELING ACCORDING TO EU DIRECTIVES

ANNEX I INDEX NUMBER: 027-004-00-5

NOTA: 1,E

INDICATION OF DANGER: T N

Toxic. Dangerous for the environment.

R-PHRASES: 49 22 42/43 50/53

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

S-PHRASES: 53 22 45 60 61

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

##### COUNTRY SPECIFIC INFORMATION

Germany

WGK: 2

SWITZERLAND

SWISS POISON CLASS: 3

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#### 16 - Other Information

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##### WARRANTY

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 Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2004 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.

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