

# Material Safety Data Sheet

## Cobalt Nanopowder, 28 nm

Revision Date: 01/12/2010

Date Issued: 11/24/2006

### 1 IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY / UNDERTAKING

<b>Product name</b>	Cobalt
<b>Product code</b>	NM-0007-HP
<b>Supplier</b>	IoLiTec Ionic Liquids Technologies GmbH Salzstrasse 184 D-74076 Heilbronn Germany
<b>Telephone</b>	+49 (0)7131 – 898390
<b>Fax</b>	+49 (0)7131 – 89839109
<b>Emergency telephone</b>	+49 (0)179 – 5322578
<b>Email</b>	msds@iolitec.de

### 2 HAZARDS IDENTIFICATION

#### 2.1 Classification of the substance or mixture

##### Classification (67/548/EEC or 1999/45/EC)

Flammable solid

##### Classification (REGULATION (EC) No 1272/2008)

Flammable solids, Category 1, H228

Respiratory sensitisation, Category 1, H334

Skin sensitisation, Category 1, H317

Hazardous to the aquatic environment: Chronic hazard, Category 4, H413

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### 2.2 Label elements

#### Labelling (67/548/EEC or 1999/45/EC)

#### Hazard description:

#### Label for supply



F Highly flammable



Xn Harmful

#### Information pertaining to particular dangers for man and environment

#### Risk phrases

R11: Highly flammable.

R42/43: May cause sensitization by inhalation and skin contact.

R53: May cause long-term adverse effects in the aquatic environment.

#### Safety phrases

S22: Do not breathe dust.

S24: Avoid contact with skin.

S37: Wear suitable gloves.

S61: Avoid release to the environment. Refer to special instructions/safety data sheets.

#### Labelling (REGULATION (EC) No 1272/2008, GHS)

#### Hazard statements



**Danger**

#### H-phrases

H228: Flammable solid.

H317: May cause an allergic skin reaction.

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H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled.

H413: May cause long lasting harmful effects to aquatic life.

### *Precautionary statements*

### **P-phrases**

P210: Keep away from heat/sparks/open flames/hot surfaces . - No smoking.

P261: Avoid breathing dust/fume .

P273: Avoid release to the environment.

P280: Wear protectic gloves/protective clothing/eye protection/face protection.

P285: In case of inadequate ventilation wear respiratory protection.

P370 + P378: In case of fire: Use sand or fire extinguisher class D for extinction.

## **3 COMPOSITION / INFORMATION ON INGREDIENTS**

<b>Ingredient name</b>	Cobalt
<b>Empirical Formula</b>	Co (partially passivated w/[O] ~10%)
<b>CAS No.</b>	7440-48-4

## **4 FIRST AID MEASURES**

<b>General</b>	Contaminated clothing should be removed and washed before being reused.
<b>Inhalation</b>	Move the exposed person to fresh air at once. If respiratory problems, artificial respiration/oxygen.
<b>Ingestion</b>	Immediately rinse mouth and provide fresh air. Do not induce vomiting. Get medical attention immediately.
<b>Skin</b>	Wash the skin immediately with soap and water. Get medical attention immediately.

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<b>Eyes</b>	Promptly wash eyes with plenty of water while lifting the eye lids. Continue to rinse for at least 15 minutes. Get medical attention immediately. Continue to rinse.
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### 5 FIRE FIGHTING MEASURES

<b>Extinguishing media</b>	Extinguishing powder. DO NOT USE WATER.
<b>Unsuitable extinguishing agents</b>	Water
<b>Special fire fighting procedures</b>	-
<b>Unusual fire &amp; explosion hazards</b>	Toxic metal oxide fume can be released in case of fire
<b>Protective measures in fire</b>	Wear self-contained breathing apparatus as combustion may produce hazardous fumes.

### 6 ACCIDENTAL RELEASE MEASURES

<b>Personal precautions during spill</b>	Wear protective clothing and avoid inhalation as well as skin or eye contact. Keep away from ignition sources.
<b>Precautions to protect environment</b>	Do not wash into water courses. Do not allow this material to be released to the environment without proper governmental permits.
<b>Spill cleanup methods</b>	Avoid contact with skin or inhalation of spillage, dust or vapor, Avoid dust formation. Collect and reclaim or dispose in sealed containers in license waste. Extinguish all

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ignition sources. Avoid sparks, flames, heat and smoking. Ventilate.

### 7 HANDLING AND STORAGE

#### Usage precautions

Keep away from heat, sparks and open flame. Do not use in confined spaces without adequate ventilation. Keep container tightly sealed.

Dust can combine with air to form an explosive mixture.

#### Storage precautions

Store in a tightly closed container in a cool, dry, well ventilated area.

#### Storage criteria

Chemical storage.

Do not store together with oxidizing and acidic materials.

Store under dry inert gas.

### 8 EXPOSURE CONTROLS AND PERSONAL PROTECTION

#### Protective equipment

Safety goggles. Chemical resistant gloves. Protective clothing. Respirator when high concentrations are present.

#### Process control measures

Provide eyewash station and safety shower.

#### Ventilation

Provide adequate general and local exhaust ventilation.

#### Exposure Limits

Cobalt

mg/m<sup>3</sup>

ACGIH TLV

0.02; confirmed animal carcinogen

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Austria	carcinogen
Belgium TWA	0.05
Denmark TWA	0.05
Finland TWA	0.05 (Skin)
Germany	Carcinogen
Hungary TWA	0.1; 0.2-STEL
Japan OEL	0.05; 2B-Carcinogen
Korea TLV	0.02 ; Confirmed animal carcinogen
Netherland MAC-TGG	0.05
Norway TWA	0.05
Poland TWA	0.05; 0.2-STEL
Russia	0.5-STEL
Sweden NGV	0.05
Switzerland MAK-W	0.1-Carcinogen
United Kingdom TWA	0.1
USA PEL	0.1 (dust and fume)

### 9 PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance</b>	Powder
<b>Color</b>	Black
<b>Odor/taste</b>	No characteristic odor.
<b>Boiling Point</b>	2900 °C
<b>Melting Point</b>	1495 °C
<b>Flash Point</b>	N/A
<b>Flammability</b>	Highly Flammable
<b>Autoignition Temp</b>	N/A
<b>Oxidizing Properties</b>	N/A
<b>Explosive Properties</b>	N/A
<b>Explosion Limits</b>	N/A
<b>Vapor Pressure</b>	N/A
<b>SG/Density</b>	8.92 g/cm <sup>3</sup> at 20 °C

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<b>Partition Coefficient</b>	N/A
<b>Viscosity</b>	N/A
<b>Vapor Density</b>	N/A
<b>Saturated Vapor Conc.</b>	N/A
<b>Evaporation Rate</b>	N/A
<b>Bulk Density</b>	N/A
<b>Decomposition Temp.</b>	N/A
<b>Solvent Content</b>	N/A
<b>Water Content</b>	N/A
<b>Surface Tension</b>	N/A
<b>Conductivity</b>	N/A
<b>Solubility in Water</b>	Insoluble

### 10 STABILITY AND REACTIVITY

<b>Stability</b>	No particular stability concerns.
<b>Conditions to avoid</b>	Oxidizing materials, acids, air, Interhalogens.
<b>Dangerous reactions</b>	Powder may cause fire
<b>Dangerous products of Decomposition</b>	Toxic metal oxide fume

### 11 TOXICOLOGICAL INFORMATION

<b>Acute toxicity</b>	LD50 oral: 6170 mg/kg (rat) LDLo 750 mg/kg (rbt)
<b>Ingestion</b>	Irritating
<b>Skin</b>	Irritating
<b>Eyes</b>	Irritating

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**Sensitization**

Possible through inhalation or skin contact

**Other information**

Tomorigenic effects have been observed on tests with laboratory animals. Mutagenic effects have been observed on tests with human and/or animal DNA cells.

### 12 ECOLOGICAL INFORMATION

**Environmental hazards**

Do not allow material to be released to the environment without proper governmental permits.

### 13 DISPOSAL CONSIDERATIONS

**Disposal method**

Contact specialist disposal companies.  
Dispose of in accordance with Local Authority requirements. Recover and reclaim or recycle, if practical.

### 14 TRANSPORT INFORMATION

**Land transport RID/ADR**

UN#: 3089

Class: 4.1

Packing group: II

Item 13c

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	Danger code (Kemler): 40
	Proper Shipping Name: Metal powder, flammable, n.o.s., cobalt powder
<b>Maritime transport IMDG</b>	UN#: 3089
	Class: 4.1
	Packing group: II
	Proper Shipping Name: Metal powder, flammable, n.o.s., cobalt powder
<b>Air transport IATA</b>	UN#: 3089
	Class: 4.1
	Packing group: II
	Proper Shipping Name: Metal powder, flammable, n.o.s., cobalt powder

### 15 REGULATORY INFORMATION

In accordance with local and national regulations.

### 16 OTHER INFORMATION

#### DISCLAIMER

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