

SUPPLIER

MATERIAL SAFETY DATA SHEET

GENERATED 03/15/2011, **REVISION** 03/08/2005, **SUPERCEDES REVISION** 01/19/2004, **DATE**
CREATED 12/28/1990

SECTION I - PRODUCT IDENTIFICATION

Cobalt sulfide CoS₂, powder

PRODUCT NAME: Cobalt sulfide CoS₂, powder
PRODUCT CODE: C-MSDS0072
REFERENCE #: 12013-10-4

MANUFACTURER INFORMATION

COMPANY NAME:

Application: **Battery production.**

EMERGENCY CONTACT:

ALTERNATE EMERGENCY CONTACT:

CHEMICAL FAMILY: Metal sulfide

CAS NUMBER: 12013-10-4

FORMULA: CoS₂

MOLECULAR WEIGHT: 123.05

SYNONYMS

Cobalt sulfide, cobalt disulfide

SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Cobalt sulfide CoS₂, powder

Hazardous Components (Chemical Name)	CAS #	Concentration	OSHA PEL	ACGIH TLV	Other Limits
Cobalt sulfide	12013-10-4	0.0 -100.0 %	.1 mg(Co)/m3	.02 mg(Co)/m3 Confirmed animal Carcinogen	NE
See SECTION IX-ADDITIONAL COMMENTS FOR COSHH Regulations	NA	0.0 -100.0 %			

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

Cobalt sulfide CoS₂, powder

<u>PHYSICAL STATES:</u>	[<input type="checkbox"/>] Gas	[<input type="checkbox"/>] Liquid	[X] Solid
<u>MELTING POINT:</u>	N.A.		
<u>BOILING POINT:</u>	N.A.		
<u>SPECIFIC GRAVITY (WATER = 1):</u>	4.269		
<u>VAPOR PRESSURE (VS. AIR OR MM HG):</u>			
<u>VAPOR DENSITY (VS. AIR = 1):</u>			
<u>EVAPORATION RATE (VS BUTYL ACETATE=1):</u>			
<u>SOLUBILITY IN WATER:</u>	insoluble		
<u>SOLUBILITY NOTES</u>			
<u>PERCENT VOLATILE:</u>	N.A.		
<u>APPEARANCE AND ODOR</u>			

Black powder, no odor.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Cobalt sulfide CoS₂, powder

<u>FLASH PT:</u>	N.A.	
<u>EXPLOSIVE LIMITS:</u>	LEL: NE	UEL: NE
<u>EXTINGUISHING MEDIA</u>		

USE: Class D or other suitable metal extinguishing agent.

SPECIAL FIRE FIGHTING PROCEDURES

Firefighters must wear full face, self-contained breathing apparatus with full protective clothing to prevent contact with skin and eyes. Fumes from fire are hazardous. Isolate runoff to prevent environmental pollution.

UNUSUAL FIRE AND EXPLOSION HAZARDS

When heated to decomposition, cobalt sulfide may emit toxic fumes of SO_x.

HAZARDOUS COMBUSTION PRODUCTS

SECTION V - REACTIVITY DATA

Cobalt sulfide CoS₂, powder

<u>STABILITY:</u>	Unstable [<input type="checkbox"/>]	Stable [X]
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CONDITIONS TO AVOID - INSTABILITY

None

INCOMPATIBILITY - MATERIALS TO AVOID

Acids

HAZARDOUS DECOMPOSITION OR BYPRODUCTS

Oxides of sulfur

<u>HAZARDOUS POLYMERIZATION:</u>	Will occur [<input type="checkbox"/>]	Will not occur [X]
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CONDITIONS TO AVOID - HAZARDOUS POLYMERIZATION

None

SECTION VI - HEALTH HAZARD DATA

Cobalt sulfide CoS₂, powder

HEALTH HAZARDS (ACUTE AND CHRONIC)

Cobalt has a low toxicity by ingestion. Ingestion of soluble salts, produces nausea and vomiting by local irritation. In animals, administration of cobalt salts produces an increase in the total red cell mass of the blood. In humans, a single case of poisoning with liver and kidney damage has been attributed to cobalt. Locally, cobalt has been shown to produce dermatitis and investigators have been able to demonstrate a hypersensitivity of the skin to cobalt. There have been reports of hematologic, digestive and pulmonary changes in humans. (Sax, Dangerous Properties of Industrial Materials, eighth edition)

Sulfides have variable toxicity. The alkaline sulfides are similar in action to alkalis. They cause softening and irritation of the skin. If ingested, they are corrosive and irritating through the liberation of hydrogen sulfide and free alkali. Sulfides of the heavy metals are generally insoluble and hence have little toxic action except through the liberation of hydrogen sulfide. (Sax, Dangerous Properties of Industrial Materials, eighth edition)

INHALATION:

Acute: May cause shortness of breath, coughing, weight loss and pulmonary damage.

Chronic: May cause diffuse nodular fibrosis and respiratory sensitivity.

INGESTION:

Acute: Moderately toxic by ingestion. May cause acute cobalt poisoning.

Chronic: No chronic health effects recorded.

SKIN:

Acute: May cause severe irritation.

Chronic: May cause allergic sensitization and dermatitis.

EYE:

Acute: May cause severe irritation and possibly damage the cornea.

Chronic: No chronic health effects recorded.

TARGET ORGANS: May affect the respiratory and pulmonary system.

CARCINOGENICITY:

NTP? No

IARC Monographs? Yes

OSHA Regulated? No

CARCINOGENICITY/OTHER INFORMATION

IARC 2B: Possibly Carcinogenic to Humans. The exposure circumstances entails exposures that are possibly carcinogenic to humans. This category is used for agents, mixtures, and exposure circumstances for which there is limited evidence of carcinogenicity in humans and less than sufficient evidence of carcinogenicity in experimental animals. It may also be used when there is inadequate evidence of carcinogenicity in humans but there is sufficient evidence of carcinogenicity in experimental animals. In some instances, an agent, mixture, or exposure circumstance for which there is inadequate evidence of carcinogenicity in humans but limited evidence of carcinogenicity in experimental animals together with supporting evidence from other relevant data may be placed in the group.

ACGIH-TLV A3: Confirmed Animal Carcinogen with unknown relevance to humans: The agent is carcinogenic in experimental animals at a relatively high dose, by route(s) of administration, at site(s), of histologic type(s), or by mechanism(s) that may not be relevant to worker exposure. Available epidemiologic studies do not confirm an increased risk of cancer in exposed humans.

Available evidence does not suggest that the agent is likely to cause cancer in humans except under uncommon or unlikely routes or levels of exposure.

RECOMMENDED EXPOSURE LIMITS

See "Section II"

LD 50 / LC 50

See "Carcinogenicity/Other Information"

SIGNS AND SYMPTOMS OF EXPOSURE

INHALATION: May cause shortness of breath, coughing and loss of weight.

INGESTION: Acute cobalt poisoning may cause: diarrhea, lower blood pressure and body temperature.

SKIN: May cause redness, itching, burning sensation and inflammation.

EYE: May cause redness, itching, burning sensation and watering.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE

Pre-existing respiratory or skin disorders.

EMERGENCY AND FIRST AID PROCEDURES

INHALATION: Remove victim to fresh air; keep warm and quiet; give oxygen if breathing is difficult and seek medical attention.

INGESTION: Do not induce vomiting; seek medical attention.

SKIN: Remove contaminated clothing; brush material off skin; wash affected area with mild soap and water; seek medical attention.

EYE: Flush eyes with lukewarm water, lifting upper and lower eyelids, for at least 15 minutes. Seek medical attention.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

Cobalt sulfide CoS₂, powder

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wear appropriate respiratory and protective equipment specified in section VIII-control measures. Isolate spill area and provide ventilation. Vacuum up spill using a high efficiency particulate absolute (HEPA) air filter and place in a closed container for proper disposal. Take care not to raise dust.

WASTE DISPOSAL METHOD

Dispose of in accordance with local, state and federal regulations.

HAZARD LABEL INFORMATION:

Store in cool, dry area Store in tightly sealed container Wash thoroughly after handling

PRECAUTIONS TO BE TAKEN IN HANDLING

None

PRECAUTIONS TO BE TAKEN IN STORING

None

OTHER PRECAUTIONS

None

SECTION VIII- CONTROL MEASURES

Cobalt sulfide CoS₂, powder

PROTECTIVE EQUIPMENT SUMMARY - HAZARD LABEL INFORMATION:

NIOSH approved respirator Impervious gloves Safety glasses Clothes to prevent skin contact

RESPIRATORY EQUIPMENT (SPECIFY TYPE)

NIOSH - approved respirator

EYE PROTECTION

Safety glasses

PROTECTIVE GLOVES

Butyl or polycarbonate gloves

OTHER PROTECTIVE CLOTHING

Protective gear suitable to prevent contamination

VENTILATION

Local exhaust ventilation may be necessary to control any air contaminants to within their PELs or TLVs during the use of this product.

WORK/HYGIENIC/MAINTENANCE PRACTICES

Implement engineering and work practice controls to reduce and maintain concentration of exposure at low levels. Use good housekeeping and sanitation practices. Do not use tobacco or food in work area. Wash thoroughly before eating and smoking. Do not blow dust off clothing or skin with compressed air.

SECTION IX - ADDITIONAL COMMENTS

Cobalt sulfide CoS₂, powder