Safety Data Sheet

Skyspring Nanomaterials, Inc. | www.ssnano.com

REVISION ON 12/01/2015

1 Identification of substance:

- **Product name:** Cobalt Nanopowder (Carbon coated)
- **Product number:** 0610SJ
- **Manufacturer/Supplier:**
  SkySpring Nanomaterials, Inc.
  2935 Westhollow Dr., Houston, TX 77082, USA
  Phone: 281-870-1700, Fax: 281-870-8002, Email: sales@ssnano.com

2 Composition/Information on ingredients:

- Synonyms: Cobalt
- **Formula:** Co
- **Molecular Weight:** 58.93 g/mol
- **CAS No.**: 7440-48-4
- **EC-No.:** 231-158-0

3 Hazards identification

Emergency Overview

OSHA Hazards

Flammable Solid, Carcinogen, Respiratory sensitizer

Target Organs

Kidney, Eyes, Skin, Respiratory system

HMIS Classification

Health Hazard: 2
Flammability: 0
Physical hazards: 3

NFPA Rating

Health Hazard: 2
Fire: 0
Reactivity Hazard: 3

Potential Health Effects

Inhalation May be harmful if inhaled. May cause respiratory tract irritation.
Skin May be harmful if absorbed through skin. May cause skin irritation.
Eyes May cause eye irritation.
Ingestion May be harmful if swallowed.

4 First aid measures

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance.Move out of dangerous area.

If inhaled

If breathed in, move person into fresh air. If not breathing give artificial respiration Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5 Fire fighting measures

Flammable properties

Flash point not applicable

Ignition temperature no data available

Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special protective equipment for fire-fighters

Wear self contained breathing apparatus for fire fighting if necessary.

6 Accidental release measures

Personal precautions

Use personal protective equipment. Avoid dust formation. Avoid breathing dust. Ensure adequate ventilation.

Environmental precautions

Do not let product enter drains. Discharge into the environment must be avoided.

Methods for cleaning up

Pick up and arrange disposal without creating dust. Keep in suitable, closed containers for disposal.

7 Handling and storage

Handling

Avoid formation of dust and aerosols.

Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for preventive fire protection.

Storage

Keep container tightly closed in a dry and well-ventilated place.

Keep in a dry place. Air sensitive. Handle and store under inert gas.

8 Exposure controls and personal protection

* Additional information about design of technical systems:
Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

Components with limit values that require monitoring at the workplace:

Cobalt, elemental & inorganic compounds, as Co

	mg/m3
ACGIH TLV	0.02; Confirmed animal carcinogen
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
Netherlands 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)

* Additional information: No data

* Personal protective equipment

* General protective and hygienic measures
  The usual precautionary measures for handling chemicals should be followed.
  Keep away from foodstuffs, beverages and feed.
  Remove all soiled and contaminated clothing immediately.
  Wash hands before breaks and at the end of work.

* Breathing equipment:
  Use suitable respirator when high concentrations are present.

* Protection of hands:
  Impervious gloves
  Check protective gloves prior to each use for their proper condition.

* Material of gloves
  The selection of suitable gloves not only depends on the material, but also on quality. Quality will vary from manufacturer to manufacturer.

* Eye protection: Safety glasses

* Body protection: Protective work clothing.

9 Physical and chemical properties:

* General Information

* Form: Powder
* Color: Black
* Odor: Odorless
* Value/Range Unit Method
* Change in condition
* Melting point/Melting range: 1495 ° C
* Boiling point/Boiling range: 2900 ° C
* Sublimation temperature / start: Not determined
* Flash point: Not applicable
* Flammability (solid, gaseous) Highly flammable.
* Ignition temperature: Not determined
* Decomposition temperature: Not determined
* Explosion limits:
* Lower: Not determined
* Upper: Not determined
* Vapor pressure: Not determined
* Density: at 20 ° C 8.92 g/cm³
* Solubility in / Miscibility with
  Water: Insoluble

10 Stability and reactivity

Storage stability
Stable under recommended storage conditions.
Conditions to avoid
Air
Materials to avoid
Oxidizing agents, Mineral acidsAcetylene, Hydrazinium nitrate, Strong oxidizing agents, Material readily reacts with acids generating flammable and/or explosive hydrogen gas.
Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Cobalt/cobalt oxides

11 Toxicological information

Acute toxicity
LD50 Oral - rat - 6,171 mg/kg
Remarks: Behavioral:Somnolence (general depressed activity). Behavioral:Ataxia. Diarrhoea
Irritation and corrosion
no data available
Sensitisation
May cause allergic respiratory reaction.
Chronic exposure
This product is or contains a component that has been reported to be possibly carcinogenic based on its IARC, ACGIH, NTP, or EPA classification.
IARC: Group 2B - Possibly carcinogenic to humans (Cobalt)
NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
Signs and Symptoms of Exposure
Kidney injury may occur., Damage to the eyes., Lung irritation
Kidney injury may occur., Damage to the eyes., Lung irritation, Throat., Rash, Vomiting, Diarrhoea
Potential Health Effects
Inhalation May be harmful if inhaled. May cause respiratory tract irritation.
Skin May be harmful if absorbed through skin. May cause skin irritation.
Eyes May cause eye irritation.
Ingestion May be harmful if swallowed.
Target Organs Kidney, Eyes, Skin, Respiratory system,
Additional Information
RTECS: GF8750000

12 Ecological information:

Elimination information (persistence and degradability)
Bioaccumulation Rudarius ercodes - 8 Weeks
Bioconcentration factor (BCF): 2.16
Ecotoxicity effects
Toxicity to algae IC50 - Pseudokirchneriella subcapitata (green algae) - 0.05 mg/l - 72 h
Further information on ecology
May cause long-term adverse effects in the aquatic environment.
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

13 Disposal considerations

Product
Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Observe all federal, state, and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material.
Contaminated packaging
Dispose of as unused product.

14 Transport information

DOT (US)
UN-Number: 3089 Class: 4.1 Packing group: II
Proper shipping name: Metal powders, flammable, n.o.s.
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG
UN-Number: 3089 Class: 4.1 Packing group: II EMS-No: F-G, S-G
Proper shipping name: METAL POWDER, FLAMMABLE, N.O.S.
Marine pollutant: No

IATA
UN-Number: 3089 Class: 4.1 Packing group: II
Proper shipping name: Metal powder, flammable n.o.s.

15 Regulations

OSHA Hazards
Flammable Solid, Carcinogen, Respiratory sensitizer
DSL Status
All components of this product are on the Canadian DSL list.
SARA 302 Components
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA 313 Components
Cobalt
CAS-No.
7440-48-4
Revision Date
1991-07-01
SARA 311/312 Hazards
Fire Hazard, Acute Health Hazard, Chronic Health Hazard
Massachusetts Right To Know Components
Cobalt
CAS-No.
7440-48-4
Revision Date
1991-07-01
Pennsylvania Right To Know Components
Cobalt
CAS-No.
7440-48-4
Revision Date
1991-07-01
New Jersey Right To Know Components
Cobalt
CAS-No.
7440-48-4
Revision Date
1991-07-01
California Prop. 65 Components
WARNING! This product contains a chemical known in the State of California to cause cancer.
Cobalt
CAS-No.
7440-48-4
Revision Date
1992-07-01

16 Other information:

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.