1. PRODUCT AND COMPANY IDENTIFICATION

Trade Name: Cobalt Nickel Sulfide

Chemical Formula: $Co_xNi_{1-x}S_2$, where $0 < x < 1$

Manufacturer Item Number: CO-1550

Manufacturer:
Lorad Chemical Corporation
1200 19th Street North
Saint Petersburg, Florida, 33713
United States of America

Telephone: +1 (727) 826–5511

Fax: +1 (727) 826–5510

Emergency Contact:
(800) 255–3924 (US & Canada)
+1 (813) 248–0573 (International)

2. HAZARD IDENTIFICATION

Hazard Classification
Skin Sensitization (Category 1)
Germ Cell Mutagenicity (Category 2)
Carcinogenicity (Category 1A)
Specific Target Organ Toxicity - Repeated Exposure (Category 1)
Long-term Aquatic Hazard (Chronic 1)

Signal Word: Danger

Pictograms:



Hazard Statements:

H317 May cause an allergic skin reaction.
H341 Suspected of causing genetic defects.
H350 May cause cancer by inhalation.
H372 Causes damage to organs through prolonged or repeated exposure if inhaled.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary Statements: **Prevention**

P210 Obtain special instructions before reuse.
P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe dust / fumes / gas / mist / vapors / spray.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink, or smoke when using this product.
P272 Contaminated work clothing should not be allowed out of the workplace.
P273 Avoid release to the environment.
P280 Wear protective gloves.

Response

P302+352	IF ON SKIN: Wash with plenty of soap and water.
P318	If exposed or concerned, get medical advice.
P321	Specific treatment (see supplemental first aid instructions on this label).
P333+317	If skin irritation or rash occurs: Get medical help.
P362+364	Take off contaminated clothing and wash it before reuse.
P391	Collect spillage.

Storage

P405	Store locked up.

Disposal

P501	Dispose of contents / container to an approved waste disposal plant.

Other Hazards No data available.

3. COMPOSITION

Additional Names: mixed cobalt nickel sulfide, cobalt nickel pyrite

Percentage:	**Component**	**Classification**	**Concentration**
	Cobalt Nickel Sulfide	Skin Sens. 1; H317, Muta. 2, H341, Carc. 1A; H350, STOT RE 1; H372, Aquatic Chronic 1; H410	100% wt

CAS #: 59217-83-3

EC #: Not assigned.

Note: Mixed Cobalt Nickel Sulfide with the general formula $Co_xNi_{1-x}S_2$, where $0 < x < 1$.

4. FIRST AID PROCEDURES

General Treatment If exposure occurs or symptoms develop, seek medical advice or attention. Show this SDS to the physician if medical attention is required.

Special Treatment: Treat symptomatically.

Important Symptoms: May cause an allergic skin reaction. Dust may cause mechanical irritation to the eyes and respiratory tract. Prolonged or repeated inhalation of dust may cause adverse health effects.

Inhalation: Remove person to fresh air and keep comfortable for breathing. If breathing is difficult, seek medical attention. If not breathing, provide artificial respiration by trained personnel and obtain immediate medical attention.

Ingestion: Rinse mouth with water. Never give anything by mouth to an unconscious person. Do not induce vomiting unless directed by medical personnel. Seek medical attention if symptoms develop or if a large quantity has been swallowed.

Skin: Wash thoroughly with soap and water. Remove contaminated clothing and wash before reuse. If skin irritation or an allergic skin reaction develops, seek medical attention.

Eyes: Immediately flush eyes with water for at least 15 minutes while holding the eyelids open. Remove contact lenses if present and easy to do. Continue rinsing. Seek medical attention if irritation persists.

5. FIREFIGHTING MEASURES

Special Hazards from Substance: This material is not combustible. Fire or high temperatures may produce hazardous decomposition products, including sulfur oxides, hydrogen sulfide under oxygen deficient conditions, and nickel and cobalt oxide fumes.

Extinguishing Media: Use extinguishing media appropriate for the surrounding fire. Water spray, alcohol resistant foam, dry chemical, or carbon dioxide may be used.

Special Fire Fighting Procedures: Wear self contained breathing apparatus and full protective clothing. Avoid breathing combustion or decomposition products. Cool exposed containers with water spray if safe to do so.

6. ACCIDENTAL RELEASE MEASURES

If Material is Released / Spilled: Use appropriate personal protective equipment. Avoid dust formation and breathing dust. Ensure adequate ventilation. Evacuate unnecessary personnel from the area. Sweep up carefully or vacuum using equipment fitted with HEPA filtration where practical, and place the material in a suitable, closed container for disposal. Dispose of waste in accordance with applicable federal, state, local, and provincial regulations.

Environmental Precautions: Prevent further leakage or spillage if safe to do so. Do not allow material to enter drains, sewers, or waterways. Avoid release to the environment.

7. HANDLING AND STORAGE

Handling Conditions: Avoid contact with skin and eyes. Avoid generating airborne dust. Further processing of this material may generate combustible dust. The potential for combustible dust formation should be evaluated before additional processing operations such as grinding, milling, or blending. Provide adequate local exhaust ventilation where dust is generated. For additional precautions, see Section 2.

Storage Conditions: Keep container tightly closed in a cool, dry, and well ventilated place. Store away from incompatible materials.

Work / Hygienic Maintenance: Do not eat, drink, or smoke when using this product. Wear appropriate personal protective equipment and wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Minimize the generation and accumulation of airborne dust. If ventilation is inadequate, wear appropriate respiratory protection.

Ventilation: Provide adequate general ventilation. Use local exhaust ventilation where dust is generated.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits:

Authority	Basis	Limit	Remarks
OSHA	PEL	1.0 mg/m³	8-hour time weighted average. Nickel, metal and insoluble compounds (as Ni) - Occupational Exposure Limit (air contaminant) (Table Z-1)
California	PEL	0.1 mg/m³	8-hour time weighted average. Nickel, insoluble compounds (as Ni) - California permissible exposure limit for chemical contaminants (Title 8, Article 107)
NIOSH	REL	0.015 mg/m³	10-hour time weighted average. Nickel, insoluble compounds (as Ni)
ACGIH	TLV	0.2 mg/m³	8-hour time weighted average. Nickel, insoluble inorganic compounds (as Ni)
OSHA	PEL	0.1 mg/m³	8-hour time weighted average. Cobalt metal dust and fumes (as Co)
ACGIH	TLV	0.02 mg/m³	8-hour time weighted average. Cobalt and inorganic compounds (as Co), inhalable fraction

	NIOSH	REL	0.05 mg/m^3	10-hour time weighted average. Cobalt metal, dust, and fumes (as Co)

Notes: No occupational exposure limits have been established specifically for Cobalt Nickel Sulfide ($Co_xNi_{1-x}S_2$). The exposure limits above are provided for nickel and cobalt compounds as guidance for controlling occupational exposure. Where multiple exposure limits apply, the more protective limit should be followed.

References:

PEL	Permissible Exposure Limit
REL	Recommended Exposure Limit
TWA	Time Weighted Average
IDLH	Immediately Dangerous to Life or Health
TLV	Threshold Limit Value

Engineering Controls: Handle in accordance with good industrial hygiene and safety practices. Provide adequate general ventilation. Use local exhaust ventilation where dust is generated to maintain airborne concentrations below applicable exposure limits.

Respiratory Protection: Where engineering controls are not sufficient to maintain airborne concentrations below applicable exposure limits, use NIOSH approved respiratory protection. For particulate exposure, use a half face or full face respirator equipped with P100 particulate filters (US) or a respirator fitted with a P3 particulate filter (EN 143). Select respiratory protection appropriate for the anticipated airborne dust concentration and duration of exposure.

Protective Gloves: Wear appropriate chemical resistant protective gloves to minimize skin contact. Remove contaminated clothing and wash before reuse. Wash hands thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace.

Eye Protection: Wear safety glasses with side shields or chemical safety goggles where dust generation may occur. Eye protection should comply with ANSI Z87.1 or equivalent.

Body Protection: Wear appropriate protective clothing to minimize skin contact. Protective equipment should be selected according to the concentration of airborne dust and the specific conditions of use in the workplace.

9. PHYSICAL AND CHEMICAL CHARACTERISTICS

Color:	Dark gray / black	**Molecular Weight:**	122.83 to 123.06 g/mol (depending on Co:Ni ratio)
Forms:	Powder	**Theoretical Density:**	Approximately 4.7 to 4.9 g/cm^3
Odor:	Odorless	**pH:**	Not applicable.
Water Solubility:	Insoluble	**Auto-Ignition Temperature:**	Not applicable.
Boiling Point:	Not applicable.	**Evaporation Rate:**	Not applicable.
Melting Point / Freezing Point:	>1,000ºC (> 1,832ºF) (decomposes)	**Flammability or Explosive Limits:**	Not applicable.
Vapor Pressure:	Not applicable.	**Partition Coefficient: n-octanol/ water**	Not applicable.
Vapor Density:	Not applicable.	**Decomposition Temperature:**	No data available.
Flash Point:	Not applicable.	**Viscosity:**	Not applicable.

10. REACTIVITY

Stability: Stable under recommended storage and handling conditions.

Reacts with: Strong oxidizing agents and strong acids.

Incompatible Conditions: Excessive heat and contact with incompatible materials. Avoid conditions that generate airborne dust.

Hazardous Decomposition Products: Sulfur oxides, hydrogen sulfide under oxygen deficient conditions, nickel oxides, and cobalt oxides.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity	Eyes:	Dust may cause mechanical irritation, including redness, tearing, and discomfort.
	Skin:	May cause skin irritation. May cause an allergic skin reaction in sensitized individuals.
	Ingestion:	May be harmful if swallowed. May cause gastrointestinal irritation if large quantities are ingested.
	Inhalation:	Dust may irritate the respiratory tract. Prolonged or repeated inhalation may cause adverse health effects.
Chronic Toxicity	Skin Corrosion / Irritation:	Not classified as corrosive. Prolonged or repeated contact may cause irritation.
	Serious Eye Damage / Irritation:	Dust may cause mechanical eye irritation. Not classified for serious eye damage.
	Respiratory / Skin Sensitization:	May cause an allergic skin reaction. No classification for respiratory sensitization.
	Mutagenic Effects:	Suspected of causing genetic defects.
	Reproductive / Teratogenic Effects:	No data available.
	Specific Target Organ Toxicity: (single exposure)	Not classified.
	Specific Target Organ Toxicity: (repeated exposure)	Causes damage to organs through prolonged or repeated inhalation exposure.
	Aspiration Hazard:	Not classified.
	Other Adverse Effects:	To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.
Carcinogenicity:	IARC:	This is or contains a component that has been reported to be carcinogenic based on its classification. Group 1 - Carcinogenic to humans.
	ACGIH:	This is or contains a component that has been reported to be carcinogenic based on its classification. A1 - Confirmed human carcinogen.
	NTP:	This is or contains a component that has been reported to be a known carcinogenic based on its classification.
	OSHA:	Nickel compounds are regulated as occupational carcinogens under applicable OSHA standards.
	EU:	This material is classified as Carcinogenicity Category 1A under Regulation (EC) No. 1272/2008 (CLP) by read across to nickel disulfide.

Additional Information: No Data Available.

12. ECOLOGICAL INFORMATION

Aquatic Toxicity: Very toxic to aquatic life with long lasting effects.

Persistence and degradability: No applicable to inorganic substances.

Bioaccumulative potential: No data available.

Notes: Avoid release to the environment. Prevent material from entering drains, sewers, or waterways.

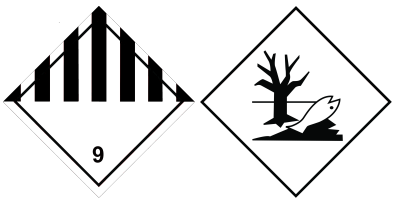
13. DISPOSAL CONSIDERATIONS

Disposal: Dispose of contents and container in accordance with applicable local, state, and federal regulations. Waste characterization is the responsibility of the waste generator. Do not discharge to drains, sewers, waterways, or the environment. Dispose of material through an approved waste disposal facility.

14. TRANSPORTATION DATA

Hazardous:
DoT: Not Dangerous Goods.
IMDG: Environmentally Hazardous Substance.
IATA: Environmentally Hazardous Substance.

Pictogram:



Hazard Class: 9

Packing Group: III

UN Number: UN3077

US DoT
Proper Name: N/A
Marine Pollutant: Yes

IMDG
Proper Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Cobalt Nickel Sulfide)
EMS-No: F-A, S-F
Marine Pollutant: Yes

IATA
Proper Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Cobalt Nickel Sulfide)

Note: For non-bulk packagings meeting the applicable transport exception, this material is not regulated by the U.S. Department of Transportation.

EHS mark required (ADR 2.2.9.1.10, IMDG Code 2.10.3) for single packagings and combination packagings containing dangerous goods in quantities exceeding 5 L per inner packaging for liquids or 5 kg per inner packaging for solids.

15. REGULATORY INFORMATION

Toxic Substance Control Act Listed (analogizing to NiS_2)

SARA 302 Components No chemicals in this material are subject to the reporting requirements of SARA title III, Section 302.

SARA 313 Components	This material contains chemical components with known CAS numbers that exceed the threshold (de minimis) reporting levels established by SARA Title III, Section 313: - Nickel Compounds - Cobalt Compounds
SARA 311/312 Hazards	Acute Health Hazard, Chronic Health Hazard.
Massachusetts Right to Know Components	Components are subject to the Massachusetts Right to Know Act: - Nickel Compounds - Cobalt Compounds
Pennsylvania Right to Know Components	Components are listed in Appendix A of the Pennsylvania Worker and Community Right to Know Act: - Nickel Compounds - Cobalt Compounds
New Jersey Right to Know Components	Components are listed on the New Jersey Right to Know Hazardous Substance List: - Nickel Compounds - Cobalt Compounds
California Prop. 65 Components	This product contains nickel compounds, which are known to the State of California to cause cancer, birth defects, or any other reproductive harm.
EU Regulations	Classified and labeled in accordance with Regulation (EC) No. 1272/2008 (CLP). Subject to the requirements of Regulation (EC) No. 1907/2006 (REACH). This substance is not listed on the REACH Candidate List of Substances of Very High Concern (SVHC) and is not subject to authorization under REACH Annex XIV. Restrictions under REACH Annex XVII may apply to nickel compounds.

16. OTHER INFORMATION

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