



LTS Research Laboratories, Inc.
Safety Data Sheet
Cobalt Chromium Iron Nickel Manganese

1. Product and Company Identification

Trade Name: Cobalt Chromium Iron Nickel Manganese
Chemical Formula: CoCrFeNiMn
Recommended Use: Scientific research and development

Manufacturer/Supplier: LTS Research Laboratories, Inc.
Street: 37 Ramland Road
City: Orangeburg
State: New York
Zip Code: 10962
Country: USA
Tel #: 855-587-2436 / 855-lts-chem

24-Hour Emergency Contact: 800-424-9300 (US & Canada)
+1-703-527-3887 (International)

2. Hazards Identification

Signal Word: Warning



Hazard Statements: H228: Flammable solid
H317: May cause an allergic skin reaction
H319: Causes serious eye irritation
H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled
H335: May cause respiratory irritation
H351: Suspected of causing cancer
H372: Causes damage to organs through prolonged or repeated exposure.

Precautionary Statements: P202: Do not handle until all safety precautions have been read and understood
P210: Keep away from heat/sparks/open flames/hot surfaces – No Smoking
P240: Ground/bond container and receiving equipment
P260: Do not breathe dust/fume/gas/mist/vapours/spray
P261 Avoid breathing dust/fume/vapor
P264: Wash face hands and any exposed skin thoroughly after handling
P280: Wear protective gloves/protective clothing/eye protection/face protection
P281: Use personal protective equipment as required
P284: Wear respiratory protection
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do continue rinsing
P308+P313: IF exposed or concerned: Get medical advice/attention
P337+P313: If eye irritation persists get medical advice/attention
P342+P311: If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician

P363: Wash contaminated clothing before reuse
P370+P378: In case of fire: Use CO₂ dry chemical or foam for extinction
P405: Store locked up
P501: Dispose of contents/container in accordance with local/regional/national/international regulations

HMIS Health Ratings (0-4):

Health:	2
Flammability:	3
Physical:	1

3. Composition

Chemical Family:	Alloy
Additional Names:	High Entropy Alloy

Cobalt (Co):

Percentage:	0-100 wt%
CAS #:	7440-48-4
EC #:	231-158-0

Chromium (Cr):

Percentage:	0-100 wt%
CAS #:	7440-47-3
EC #:	231-157-5

Iron (Fe):

Percentage:	0-100 wt%
CAS #:	7439-89-06
EC #:	231-096-4

Nickel (Ni):

Percentage:	0-100 wt%
CAS #:	7440-02-0
EC #:	231-111-4

Manganese (Mn):

Percentage:	0-100 wt%
CAS #:	7439-96-5
EC #:	231-105-1

4. First Aid Procedures

General Treatment:	Seek medical attention if symptoms persist.
Special Treatment:	None
Important Symptoms:	None

Inhalation:	Remove victim to fresh air. Supply oxygen if breathing is difficult. Seek immediate medical attention.
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Ingestion:	Give one to two glasses of water and induce vomiting. Never induce vomiting or give anything by mouth to an unconscious person. Seek immediate medical attention.
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Skin:	Wash affected area with mild soap and water. Remove any contaminated clothing. Seek immediate medical attention
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Eyes:	Flush eyes with water, blinking often for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. Seek immediate medical attention
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5. Firefighting Measures

Flammability:	Flammable as powder
Extinguishing Media: Spec. Fire Fighting Procedure:	Do not use water for metal fires – use CO ₂ , sand, extinguishing powder. Use full-face, self-contained breathing apparatus with full protective clothing to prevent contact with skin and eyes. See section 10 for decomposition products.

6. Accidental Release Measures

If Material Is Released/Spilled:	Wear appropriate respiratory and protective equipment specified in special protection information. 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 disposal. Take care not to raise dust.
Environmental Precautions:	Isolate runoff to prevent environmental pollution.

7. Handling and Storage

Handling Conditions: Storage Conditions:	Wash thoroughly after handling. Store in a cool dry place in a tightly sealed container. Store apart from materials and conditions listed in section 10.
Work/Hygienic Maintenance:	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.
Ventilation:	Provide sufficient ventilation to maintain concentration at or below threshold limit.

8. Exposure Controls and Personal Protection

Permissible Exposure Limits:	0.1 mg/m ³ as Co, long-term value 1 mg/m ³ as Cr, long-term value 5 mg/m ³ as Mn, long-term value 1 mg/m ³ as Ni, long-term value
Threshold Limit Value:	0.02 mg/m ³ as Co, long term value 0.5 mg/m ³ as Cr, long-term value 5 mg/m ³ as Fe, long-term value 0.02 mg/m ³ as Mn, long-term value 0.015 mg/m ³ as Ni, long-term value

Special Equipment:	None
Respiratory Protection:	Dust Respirator
Protective Gloves:	Rubber gloves
Eye Protection:	Safety glasses or goggles
Body Protection:	Protective work clothing. Wear close-toed shoes and long sleeves/pants.

9. Physical and Chemical Characteristics

Color	Grey/Black
Form:	Powder, Granules, Pellets, Sputtering target, Custom parts
Odor:	Odorless
Water Solubility:	Insoluble
Boiling Point:	N/A
Melting Point:	N/A
Flash Point:	N/A
Autoignition Temperature:	N/A
Density:	N/A
Molecular weight:	N/A

10. Reactivity

Stability:	Stable under recommended storage conditions
Reacts With:	Acids, Bases, Halogens Oxidizing agents
Incompatible Conditions:	Moisture sensitive
Hazardous Decomposition Products:	Metal oxide fume

11. Toxicological Information

Potential Health Effects:

Eyes:	Causes serious eye irritation
Skin:	May cause allergic reaction
Ingestion:	May cause irritation
Inhalation:	May cause allergy or asthma symptoms
Chronic:	Suspected of causing cancer

Signs & Symptoms:

Aggravated Medical Conditions:

N/A
N/A

Median Lethal Dose:

6171 mg/kg as Co for rat by mouth
30000 mg/kg as Fe for rat by mouth
9000 mg/kg as Mn for rat by mouth

Carcinogen:

IARC-2B: Possibly carcinogenic to humans: limited evidence in human in the absence of sufficient evidence in experimental animals.
ACGIH A3: Animal carcinogen: Agent is carcinogenic in experimental animals at a relatively high dose, by routes of administration, at sites, of histologic types, or by mechanisms not considered relevant to worker exposure. Available epidemiologic studies do not confirm an increased risk of cancer in exposed humans. Available evidence suggests that the agent is not likely to cause cancer in humans except under uncommon or unlikely routes or level of exposure.
NTP-R: Reasonably anticipated to be a carcinogen, limited evidence of carcinogenicity from epidemiologic studies.

12. Ecological Information

Aquatic Toxicity:	Moderate
Persistent Bioaccumulation Toxicity:	No
Very Persistent, Very Bio accumulative:	No
Notes:	Do not allow to reach ground water

13. Disposal Considerations

Dispose of in accordance with local, state, national, and international regulations.

14. Transportation Data

Hazardous: Hazardous as powder only.



Hazard Class: 4.1 Flammable Solids
Packing Group: III
UN Number: UN3089
Proper Shipping Name: Metal powders, flammable, n.o.s (Cobalt Chromium Iron Nickel Manganese)

15. Regulatory Information

Sec 302 Extremely Hazardous: No
Sec 304 Reportable Quantities: N/A
Sec 313 Toxic Chemicals: Yes

16. Other Information

This safety data sheet should be used in conjunction with technical sheets. It does not replace them. The information given is based on our knowledge of this product, at the time of publication. It is given in good faith. The attention of the user is drawn to the possible risks incurred by using the product for any other purpose other than that for which it was intended. This does not in any way excuse the user from knowing and applying all the regulations governing his activity. It is the sole responsibility of the user to take all precautions required in handling the product. The aim of the mandatory regulations mentioned is to help the user to fulfill his obligations regarding the use of hazardous products.

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