

# SAFETY DATA SHEET

ALNICO 2, ALNICO 3, ALNICO 4, ALNICO 5, ALNICO 6, ALNICO 7, ALNICO 8, ALNICO 9 & ALL SUB-GRADES

## Section 1: Identification

### 1.1. Product Identifier

**Product Form:** Mixture

**Product Name:** ALNICO 2, ALNICO 3, ALNICO 4, ALNICO 5, ALNICO 6, ALNICO 7, ALNICO 8, ALNICO 9 & ALL SUB-GRADES

**1.2. Intended Use of Product:** Cast or Sintered Alnico Magnet

**1.3. Name, Address, and Telephone of the Responsible Party:**

Allstar Magnetics  
 15100 NE 65th Street, Suite 170  
 Vancouver, WA 98682  
 1-800-949-8950  
<https://allstarmagnetics.com>

**1.4 Emergency Telephone Number:** Within USA and Canada 1-800-424-9300 or +1 703-527-3887 (collect calls accepted)

## Section 2: Hazard(s) Identification

### 2.1. Classification of the Substance or Mixture Classification (GHS-US)

Not classified

### 2.2. Label Elements GHS-US Labeling

No labeling applicable

### 2.3. Other Hazards

Under normal conditions of use and handling in the solid form, harmful substances cannot be released, nor is the solid metal piece considered flammable. Much of the information provided in this SDS is for situations of use in which hazardous exposures may occur, such as in welding applications or for metals in powder form.

### 2.4. Unknown Acute Toxicity (GHS-US)

No data available

## Section 3: Composition/ Information on Ingredients

### 3.1. Substance

Not applicable

### 3.2. Mixture

Name	Product Identifier	%	Classification (GHS-US)
Iron	(CAS No) 7439-89-6	40 - 70	Comb. Dust Flam. Sol. 1, H228 Self-heat. 1, H251
Cobalt	(CAS No) 7440-48-4	5 - 24	Acute Tox. 4 (Oral), H302 Acute Tox. 1 (Inhalation:dust,mist), H330 Eye Irrit. 2A, H319 Resp. Sens. 1B, H334 Skin Sens. 1, H317 Carc. 2, H351 Repr. 2, H361 Aquatic Acute 3, H402 Aquatic Chronic 1, H410

Nickel	(CAS No) 7440-02-0	14 - 21	Skin Sens. 1, H317 Carc. 2, H351 STOT RE 1, H372 Aquatic Acute 1, H400 Aquatic Chronic 3, H412
Aluminum	(CAS No) 7429-90-5	8 - 12	Comb. Dust Flam. Sol. 1, H228 Water-react. 2, H261
Copper	(CAS No) 7440-50-8	0.1 - 6	Comb. Dust Aquatic Acute 1, H400 Aquatic Chronic 3, H412

Full text of H-phrases: see section 16

## Section 4: First-Aid Measures

### 4.1. Description of First Aid Measures

First-aid Measures General: If medical advice is needed, have product SDS at hand.

First-aid Measures After Inhalation: If inhaled, move to fresh air and keep at rest in a position comfortable for breathing. Obtain medical attention if breathing difficulty persists.

First-aid Measures After Skin Contact: Wash immediately with plenty of soap and water. Rinse with plenty of water. Remove contaminated clothing. Wash contaminated clothing before reuse. Obtain medical attention if irritation develops or persists.

First-aid Measures After Eye Contact: Immediately rinse with water for a prolonged period (at least 15 minutes) while holding the eyelids wide open. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention if irritation develops or persists.

First-aid Measures After Ingestion: If swallowed, do not induce vomiting; seek medical advice immediately and show this SDS.

### 4.2. Most important symptoms and effects, both acute and delayed

Symptoms/Injuries: The primary acute health hazard associated with this product would be the potential for exposure to fumes during metal processing operations. Under normal conditions of use not expected to present a significant hazard. During processing or physical alteration, flakes or powder cause irritation of the respiratory tract, eyes, skin, and are harmful. Molten material may release toxic, and irritating fumes.

Symptoms/Injuries After Inhalation: During processing, inhalation of fumes may cause lung inflammation and injury with symptoms of chest pains, chills, cough, headache, and diarrhea. Inhalation of dusts and fumes can cause metal fume fever. Symptoms can include a metallic or sweet taste in the mouth, sweating, shivering, headache, throat irritation, fever, chills, thirstiness, muscle aches, nausea, vomiting, weakness, fatigue, and shortness of breath.

Symptoms/Injuries After Skin Contact: During metal processing, . Dust may cause irritation in skin folds or by contact in combination with tight clothing.

Symptoms/Injuries After Eye Contact: Dust generated from material cutting may cause a slight irritation. Slivers may be generated, which could cause mechanical irritation or injure the eye.

Symptoms/Injuries After Ingestion: If a large quantity has been ingested: Gastrointestinal irritation.

Chronic Symptoms: Aluminum: Inhalation of finely divided aluminum powder may cause pulmonary fibrosis. Nickel: May cause a form of dermatitis known as nickel itch and intestinal irritation, which may cause disorders, convulsions and asphyxia. . Inhalation of Nickel compounds has been shown in studies to provide an increased incidence of cancer of the nasal cavity, lung and possibly larynx in nickel refinery workers. Copper: Overexposure to fumes may cause metal fume fever (chills, muscle aches, nausea, fever, dry throat, cough, weakness, lassitude); metallic or sweet taste; discoloration of skin and hair. Tissue damage of mucous membranes may follow chronic dust exposure.

### 4.3. Indication of Any Immediate Medical Attention and Special Treatment Needed

If medical advice is needed, have product SDS at hand.

## Section 5: Fire-Fighting Measures

### 5.1. Extinguishing Media

**Suitable Extinguishing Media:** Earth, sand, dry chemical powder or foam.

**Unsuitable Extinguishing Media:** Water may be ineffective.

### 5.2. Special Hazards Arising From the Substance or Mixture

**Fire Hazard:** Dust, chips, or ribbons can be ignited more easily, by an ignition source, by improper machining, or by spontaneous combustion if finely divided and damp.

**Explosion Hazard:** Product itself is not explosive but if dust is generated, dust clouds suspended in air can be explosive.

**Reactivity:** Hazardous reactions will not occur under normal conditions.

### 5.3. Advice for Firefighters

**Firefighting Instructions:** Do not breathe fumes from fires or vapors from decomposition. Keep upwind.

**Protection During Firefighting:** Firefighters must use full bunker gear including NIOSH-approved positive-pressure self-contained breathing apparatus to protect against potential hazardous combustion and decomposition products.

## Section 6: Accidental Release Measures

### 6.1. Personal Precautions, Protective Equipment and Emergency Procedures

6.1.1. For Non-emergency Personnel

Protective Equipment: Wear eye protection.

Emergency Procedures: Avoid creating or spreading dust. Eliminate ignition sources.

6.1.2. For Emergency Responders

Protective Equipment: Safety glasses.

Emergency Procedures: Ventilate area. Eliminate ignition sources. Evacuate unnecessary personnel.

### 6.2. Environmental Precautions

Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.

### 6.3. Methods and Material for Containment and Cleaning Up

For Containment: Contain and collect as any solid.

Methods for Cleaning Up: Avoid generation of dust during clean-up of spills. Take up mechanically (sweeping, shoveling) and collect in suitable container for disposal. Vacuum must be fitted with HEPA filter to prevent release of particulates during clean-up. Use only non-sparking tools. Use explosion-proof equipment.

### 6.4. Reference to Other Sections

See heading 8, Exposure Controls and Personal Protection.

## Section 7: Handling and Storage

### 7.1. Precautions for Safe Handling

**Additional Hazards When Processed:** Do not handle until all safety precautions have been read and understood. Fine dust dispersed in air may ignite. Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration.

**Precautions for Safe Handling:** Do not breathe dust. Do not get in eyes, on skin, or on clothing. Avoid creating or spreading dust. Always wash hands after handling the product. Do not eat, drink or smoke when using this product. Ensure there is adequate ventilation. Wear recommended personal protective equipment.

**Hygiene Measures:** Handle in accordance with good industrial hygiene and safety procedures. Always wash your hands immediately after handling this product, and once again before leaving the workplace. Wash contaminated clothing before reuse. Do not eat, drink or smoke in areas where product is used. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

### 7.2. Conditions for Safe Storage, Including Any Incompatibilities

**Storage Conditions:** Store in a dry, cool place.

**Incompatible Materials:** Avoid contact with: Strong acids. Mineral acids. Corrosive substances in contact with metals may produce flammable hydrogen gas.

### 7.3. Specific End Use(s) Cast and Sintered Permanent Magnets

## Section 8: Exposure Controls/Personal Protection

### 8.1. Control Parameters

Nickel (7440-02-0)

USA ACGIH	ACGIH TWA (mg/m <sup>3</sup> )	1.5 mg/m <sup>3</sup>
USA NIOSH	NIOSH REL (TWA) (mg/m <sup>3</sup> )	0.015 mg/m <sup>3</sup>
USA IDLH	US IDLH (mg/m <sup>3</sup> )	10 mg/m <sup>3</sup>
USA OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	1 mg/m <sup>3</sup>

Copper (7440-50-8)

USA ACGIH	ACGIH TWA (mg/m <sup>3</sup> )	0.2 mg/m <sup>3</sup>
USA NIOSH	NIOSH REL (TWA) (mg/m <sup>3</sup> )	0.1 mg/m <sup>3</sup>
USA IDLH	US IDLH (mg/m <sup>3</sup> )	100 mg/m <sup>3</sup>
USA OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	1 mg/m <sup>3</sup>

Aluminum (7429-90-5)

USA ACGIH	ACGIH TWA (mg/m <sup>3</sup> )	1 mg/m <sup>3</sup>
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USA NIOSH	NIOSH REL (TWA) (mg/m <sup>3</sup> )	5 mg/m <sup>3</sup>
USA OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	5 mg/m <sup>3</sup>
Cobalt (7440-48-4)		
USA ACGIH	ACGIH TWA (mg/m <sup>3</sup> )	0.02 mg/m <sup>3</sup>
USA NIOSH	NIOSH REL (TWA) (mg/m <sup>3</sup> )	0.05 mg/m <sup>3</sup>
USA IDLH	US IDLH (mg/m <sup>3</sup> )	20 mg/m <sup>3</sup>
USA OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	0.1 mg/m <sup>3</sup>

**8.2. Exposure Controls**

- Appropriate Engineering Controls : Ensure adequate ventilation, especially in confined areas. Avoid dust production.
- Personal Protective Equipment : Not generally required. The use of personal protective equipment may be necessary as conditions warrant.
- Hand Protection : If material is hot, wear thermally resistant protective gloves.
- Eye Protection : During metal processing, . Safety glasses.
- Respiratory Protection : During metal processing, . If exposure limits are exceeded or irritation is experienced, NIOSH approved respiratory protection should be worn.
- Environmental Exposure Controls : Ensure adequate ventilation, especially in confined areas.

**Section 9: Physical and Chemical Properties**

**9.1. Information on Basic Physical and Chemical Properties**

- Physical State : Solid
- Appearance : Metallic gray to black castings
- Color : Metallic
- Odor : Odorless.
- Odor Threshold : No data available
- pH : No data available
- Evaporation Rate : No data available
- Melting Point : 1200 - 1450 °C (2192 - 2642 °F)
- Freezing Point : No data available
- Boiling Point : No data available
- Flash Point : No data available
- Auto-ignition Temperature : No data available
- Decomposition Temperature : No data available
- Flammability (solid, gas) : No data available
- Vapor Pressure : No data available
- Relative Vapor Density at 20 °C : No data available
- Relative Density : No data available
- Density : 6.8 - 7.4 g/cc
- Solubility : Water: Insoluble
- Partition Coefficient: N-octanol/water : No data available
- Viscosity : No data available
- Explosive Properties : None.
- Oxidizing Properties : None.

**9.2. Other Information** No additional information available

**Section 10: Stability and Reactivity**

- 10.1 Reactivity: Hazardous reactions will not occur under normal conditions.
- 10.2 Chemical Stability: Product is stable.
- 10.3 Possibility of Hazardous Reactions: Hazardous polymerization will not occur.

- 10.4 Conditions to Avoid: None known.
- 10.5 Incompatible Materials: Incompatible with : Strong acids. Mineral acids. Corrosive substances in contact with metals may produce flammable hydrogen gas.
- 10.6 Hazardous Decomposition Products: Oxides of iron. Oxides of aluminum. Oxides of nickel. Cobalt oxide.

### Section 11: Toxicological Information

#### 11.1. Information On Toxicological Effects

Acute Toxicity: Not classified.

Iron (7439-89-6)

LD50 Oral Rat	98.6 g/kg
ATE (Oral)	98,600.00 mg/kg body weight

Nickel (7440-02-0)

LD50 Oral Rat	> 9000 mg/kg
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Cobalt (7440-48-4)

LD50 Oral Rat	215.9 - 1140 mg/kg
LC50 Inhalation Rat	> 10 mg/l (Exposure time: 1 h)
ATE (Oral)	215.90 mg/kg body weight
ATE (Dust/Mist)	0.01 mg/l/4h

Skin Corrosion/Irritation: Not classified

Serious Eye Damage/Irritation: Not classified.

Respiratory or Skin Sensitization: Not classified. Not classified.

Germ Cell Mutagenicity: Not classified

Carcinogenicity: Not classified.

Nickel (7440-02-0)

IARC group	2B
National Toxicity Program (NTP) Status	Reasonably anticipated to be Human Carcinogen.

Cobalt (7440-48-4)

IARC group	2B
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**Reproductive Toxicity:** Not classified.

**Specific Target Organ Toxicity (Single Exposure):** Not classified  
**Specific Target Organ Toxicity (Repeated Exposure):** Not classified.  
**Aspiration Hazard:** Not classified

**Symptoms/Injuries After Inhalation:** During processing, inhalation of fumes may cause lung inflammation and injury with symptoms of chest pains, chills, cough, headache, and diarrhea. Inhalation of dusts and fumes can cause metal fume fever. Symptoms can include a metallic or sweet taste in the mouth, sweating, shivering, headache, throat irritation, fever, chills, thirstiness, muscle aches, nausea, vomiting, weakness, fatigue, and shortness of breath.

**Symptoms/Injuries After Skin Contact:** During metal processing, . Dust may cause irritation in skin folds or by contact in combination with tight clothing.

**Symptoms/Injuries After Eye Contact:** Dust generated from material cutting may cause a slight irritation. Slivers may be generated, which could cause mechanical irritation or injure the eye.

**Symptoms/Injuries After Ingestion:** If a large quantity has been ingested: Gastrointestinal irritation.

**Chronic Symptoms: Aluminum:** Inhalation of finely divided aluminum powder may cause pulmonary fibrosis. Nickel: May cause a form of dermatitis known as nickel itch and intestinal irritation, which may cause disorders, convulsions and asphyxia.

**Inhalation of Nickel compounds** has been shown in studies to provide an increased incidence of cancer of the nasal cavity, lung and possibly larynx in nickel refinery workers. Copper: Overexposure to fumes may cause metal fume fever (chills, muscle aches, nausea, fever, dry throat, cough, weakness, lassitude); metallic or sweet taste; discoloration of skin and hair. Tissue damage of mucous membranes may follow chronic dust exposure.

### Section 12: Ecological Information (non-mandatory)

#### 12.1. Toxicity

Nickel (7440-02-0)

LC50 Fish 1	100 mg/l (Exposure time: 96 h - Species: Brachydanio rerio)
EC50 Daphnia 1	13 (13 - 200) µg/l (Exposure time: 48h - Species: Ceriodaphnia dubia [static])
LC 50 Fish 2	1.3 mg/l (Exposure time: 96 h - Species: Cyprinus carpio [semi-static])
EC50 Daphnia 2	1 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])

EC50 Other Aquatic Organisms 2	0.174 (0.174 - 0.311) mg/l (Exposure time: 96 h - Species: Pseudokirchneriella subcapitata [static])
Copper (7440-50-8)	
LC50 Fish 1	<= 0.0068 (0.0068 - 0.0156) mg/l (Exposure time: 96 h - Species: Pimephales promelas)
EC50 Daphnia 1	0.03 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
EC50 Other Aquatic Organisms 1	0.0426 (0.0426 - 0.0535) mg/l (Exposure time: 72 h - Species: Pseudokirchneriella subcapitata [static])
LC 50 Fish 2	0.3 mg/l (Exposure time: 96 h - Species: Pimephales promelas [static])
EC50 Other Aquatic Organisms 2	0.031 (0.031 - 0.054) mg/l (Exposure time: 96 h - Species: Pseudokirchneriella subcapitata [static])
Cobalt (7440-48-4)	
LC50 Fish 1	100 mg/l (Exposure time: 96 h - Species: Brachydanio rerio [static])
<b>12.2. Persistence and Degradability</b>	
ALNICO 1, ALNICO 2, ALNICO 5, ALNICO 5DG, ALNICO 5 COL. ALL GRADES	
Persistence and Degradability	Not readily biodegradable.
Copper (7440-50-8)	
Persistence and Degradability	Not readily biodegradable.
<b>12.3. Bioaccumulative Potential</b>	
Cobalt (7440-48-4)	
BCF fish 1	(no bioaccumulation)
<b>12.4. Mobility in Soil</b> No additional information available	
<b>12.5. Other Adverse Effects</b> No additional information available	
<b>Section 13: Disposal Considerations (non-mandatory)</b>	
<b>13.1. Waste treatment methods</b>	
Sewage Disposal Recommendations: Do not empty into drains; dispose of this material and its container in a safe way.	
Waste Disposal Recommendations: Dispose of waste material in accordance with all local, regional, national, and international regulations.	
<b>Section 14: Transport Information (non-mandatory)</b>	
In Accordance With ICAO/IATA/IMDG/DOT	
14.1. UN Number Not regulated for transport	
14.2. UN Proper Shipping Name Not regulated for transport	
14.3. Additional Information Not regulated for transport	
Transport by Sea Not regulated for transport	
Air Transport Not regulated for transport	
<b>Section 15: Regulatory Information (non-mandatory)</b>	
<b>15.1 US Federal Regulations</b>	
Iron (7439-89-6)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Nickel (7440-02-0)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Listed on United States SARA Section 313	
RQ (Reportable quantity, section 304 of EPA's List of Lists):	100 lb (only applicable if particles are < 100 µm)
SARA Section 313 - Emission Reporting	0.1 %
Copper (7440-50-8)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Listed on United States SARA Section 313	
SARA Section 313 - Emission Reporting	1.0 %
Aluminum (7429-90-5)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	

Listed on United States SARA Section 313	
SARA Section 313 - Emission Reporting	1.0 % (dust or fume only)
Cobalt (7440-48-4)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Listed on United States SARA Section 313	
SARA Section 313 - Emission Reporting	0.1 %
<b>15.2 US State Regulations</b>	
Nickel (7440-02-0)	
U.S. - California - Proposition 65 - Carcinogens List	WARNING: This product contains chemicals known to the State of California to cause cancer.
Cobalt (7440-48-4)	
U.S. - California - Proposition 65 - Carcinogens List	WARNING: This product contains chemicals known to the State Of California to cause cancer.
Nickel (7440-02-0)	
U.S. - Massachusetts - Right To Know List	
U.S. - New Jersey - Right to Know Hazardous Substance List	
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List	
U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances	
U.S. - Pennsylvania - RTK (Right to Know) List	
Copper (7440-50-8)	
U.S. - Massachusetts - Right To Know List	
U.S. - New Jersey - Right to Know Hazardous Substance List	
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List	
U.S. - Pennsylvania - RTK (Right to Know) List	
Aluminum (7429-90-5)	
U.S. - Massachusetts - Right To Know List	
U.S. - New Jersey - Right to Know Hazardous Substance List	
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List	
U.S. - Pennsylvania - RTK (Right to Know) List	
Cobalt (7440-48-4)	
U.S. - Massachusetts - Right To Know List	
U.S. - New Jersey - Right to Know Hazardous Substance List	
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List	
U.S. - Pennsylvania - RTK (Right to Know) List	
<b>Section 16: Other Information</b>	
Revision Date	: 09/02/2014
Other Information	: This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.
GHS Full Text Phrases:	
Acute Tox. 1 (Inhalation: dust, mist)	Acute toxicity (inhalation: dust, mist) Category 1
Acute Tox. 4 (Oral)	Acute toxicity (oral) Category 4
Aquatic Acute 1	Hazardous to the aquatic environment - Acute Hazard Category 1
Aquatic Acute 3	Hazardous to the aquatic environment - Acute Hazard Category 3
Aquatic Chronic 1	Hazardous to the aquatic environment - Chronic Hazard Category 1
Aquatic Chronic 3	Hazardous to the aquatic environment - Chronic Hazard Category 3
Carc. 2	Carcinogenicity Category 2
Comb. Dust	Combustible Dust
Eye Irrit. 2A	Serious eye damage/eye irritation Category 2A
Flam. Sol. 1	Flammable solids Category 1
Repr. 2	Reproductive toxicity Category 2

Resp. Sens. 1B	Respiratory sensitisation Category 1B
Self-heat. 1	Self-heating substances and mixtures Category 1
Skin Sens. 1	Skin sensitization Category 1
STOT RE 1	Specific target organ toxicity (repeated exposure) Category 1
Water-react. 2	Substances and mixtures which in contact with water emit flammable gases Category 2
H228	Flammable solid
	May form combustible dust concentrations in air
H251	Self-heating: may catch fire
H261	In contact with water releases flammable gases
H302	Harmful if swallowed
H317	May cause an allergic skin reaction
H319	Causes serious eye irritation
H330	Fatal if inhaled
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled
H351	Suspected of causing cancer
H361	Suspected of damaging fertility or the unborn child
H372	Causes damage to organs through prolonged or repeated exposure
H400	Very toxic to aquatic life
H402	Harmful to aquatic life
H410	Very toxic to aquatic life with long lasting effects
H412	Harmful to aquatic life with long lasting effects

*This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.*