

SAFETY DATA SHEET

Samarium Cobalt

Section 1: Identification

1.1. Product Identifier

Product Form: Mixture

Product Name: Samarium Cobalt

1.2. Intended Use of Product: Samarium Cobalt permanent 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 Applicable. Semi-finished and finished products constitute manufactured articles under the terms of the REACH Regulation (EC) No 1907/2006. For articles, there is no obligation to classify according to CLP-Regulation.

2.2. Label Elements GHS-US Labeling

No labeling applicable

2.3. Other Hazards

Not Applicable. Semi-finished and finished products constitute manufactured articles under the terms of the REACH Regulation (EC) No 1907/2006. For articles, there is no obligation to classify according to CLP-Regulation

2.4. Unknown Acute Toxicity (GHS-US)

No data available

Section 3: Composition/ Information on Ingredients

3.1. Substance

Not applicable

3.2. Mixture: The classifications below reflect the classification of each pure substance respectively and are intended for information only

Name	Product Identifier	%	Classification (GHS-US)
Samarium	(CAS No) 7440-19-9 EINICS: 231-128-7	~35%	(powder) [Sm] Xi R36/38, F R11 R53 Flam. H228; H315 ; H319 ; H413
Cobalt	(CAS No) 7440-48-4 EINICS: 231-158-0 Index number: 027-001-00-9	~65%	Xi R42/43, R53 Resp. Sens. 1, H334 Skin Sens. 1, H317 ; H413
Additional Information (listed rare earths)	Classification as per CLP notification. Listed classifications refer exclusively to powder form. Specified rare earth are classified as NON-hazardous in solid form.		

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: Brush off powders and 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. Foreign bodies which have penetrated the skin must be removed and the wound cleaned thoroughly.

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

4.3. Most important symptoms and effect, both acute and delayed. No further relevant information or indication of any immediate medical attention and special treatment available

4.4. 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: Extinguishing agents must be adapted to the environment. Noncombustible, dry chemicals without oxygen compounds or sand should be used.

5.2. Special Hazards Arising From the Substance or Mixture No further relevant information available.

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 (Protective Equipment): No special measure required.

Section 6: Accidental Release Measures

6.1. Personal Precautions, Protective Equipment and Emergency Procedures: No special measures required.

6.2. Environmental Precautions: No special measures required.

6.3. Methods and Material for Containment and Cleaning Up: No special measures required.

6.4. Reference to Other Sections

See heading 7 for Safe Handling Section

See heading 8 Exposure Controls and Personal Protection.

See heading 13 for Disposal Information

Section 7: Handling and Storage

7.1. Precautions for Safe Handling: No protective measures are required in the provided form.

Additional Hazards When Processed:

7.1.1. Dry Mechanical Processing: This processing of rare earth permanent magnet alloys is permitted only under special safety precautions because dusts which are capable of self-heating or pyrophoric dusts with a tendency to explode may be produced.

7.1.2. Wet Mechanical Processing: Watery processing medium can react with the magnet grinding and may form hydrogen already at room temperature. Attention – Formation of ex-atmospheres possible! Part of the resulting hydrogen is stored in the material. The resulting processing sludges must be kept under a protective liquid because dried out sludge are capable of self-heating or may react. In this case, stored hydrogen volume burns off with flames. Also, see Section 8.

Conditions for Safe Storage, Including Any Incompatibilities: Please keep magnetized magnets away from computers, displays and magnetic storage devices, like floppy discs, magnetic tapes or credit cards as it can destroy or alter the magnetic data.

People with heart pacemakers must keep away from magnetic fields.

Storeroom and Receptacle Requirements: Store in dry location free of corrosive atmosphere. Keep away from magnetic objects such as iron, cobalt or nickel and high energy magnetic fields.

Section 8: Exposure Controls/Personal Protection

Additional Information about Design of Technical Systems: Provide filtered ventilation of working area for all processing steps. Suitable breathing apparatus must be used (see personal safety equipment) for repair and maintenance work on air handling systems, especially during filter changes.

8.1. Control Parameters:

Components with limit values that require monitoring at the workplace

Cobalt (Co) 7440-48-4

EL (Canada)	0.2 mg/m ³ ; IARC 2B
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EV (Canada)	0.1 mg/m ³
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PEL (OSHA USA)	0.1 mg/m ³ as Co; *for metal dust and fume, as Co
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REL (USA)	0.05 mg/m ³
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	inorg. cmpds.: *metal dust and fume, as Co
TLV (USA)	0.02 mg/m ³ as Co; BEI
Ingredients with biological limit values	
Cobalt (Co) 7440-48-4	
BEI USA	15 µg/L Medium: urine Time: end of shift at end of workweek Parameter: Cobalt (background, semi-quantitative)
Additional Information: The lists that were valid during the creation were used as basis.	

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. Use good personal hygiene practices. Keep magnetized parts away from mechanical/electrical instruments which may be damaged by high magnetic fields. Keep away from foodstuffs, beverages and feed. Wash hands before breaks and at the end of shift. Avoid contact with the eyes and skin

Hand Protection: Avoid repeated and prolonged contact with the skin, use protective gloves, especially when handling magnetized parts or parts which may have sharp edges. Preventive skin protection by use of skin protecting agents is recommended.

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.

Breathing Mask, (Apparatus w/ Particle Filter P2/P3): Full face mask (EN 136); Breathing mask (EN149) FFP2 or FFP3; 10 times the limit value (FFP2); 30 times the limit value (FFP3); Recommendation: P3.

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

Note: The physical and chemical properties of this section refer to the unplated permanent magnet alloy. No values are available for the coating itself.

Physical State	: Solid
Appearance	: parts
Color	: Metallic
Odor	: Odorless.
Odor Threshold	: No data available
pH	: No data available
Evaporation Rate	: No data available
Melting Point	: 1220 - 1320 °C (2228 - 2408 °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	: 8.3 g/cc
Solubility	: Water: Insoluble
Partition Coefficient: N-octanol/water	: No data available
Viscosity	: No data available

Explosive Properties : Omitted (in the provided form). See Section 2 and/or 7.
 Oxidizing Properties : No data available
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: Hydrogen is released in contact with acid which can cause explosive gas mixtures.
 10.4 Conditions to Avoid: Avoid exposure of powdered magnet material to air, oxygen or halogenated hydrocarbons and to elevated temperatures above 150° C. Do not use or store in conditions as follows: acidic, alkaline or electrically conductive liquids, corrosive gases.
 10.5 Incompatible Materials: Fine powders are incompatible with air, oxygen, halogenated hydrocarbons with strong oxidizers. Avoid acids and other oxidizing agents.
 10.6 Hazardous Decomposition Products: No dangerous decomposition products known.

Section 11: Toxicological Information

11. Information On Toxicological Effects

Acute Toxicity: The following applies for the pure substance.

Cobalt (7440-48-4)

Oral Rat	LD50	6170 mg/kg (rat)
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Primary irritant effect: Cobalt in the form of inhalable dust can lead to hypersensitization when inhaled. Also, it is possible the sensitization develops if the surface is chromated and if repeated and extended skin contact with this chromated surface occurs.

Symptoms/Injuries After Skin Contact: During metal processing, . : Irritant to skin and mucous membranes. Rare earths (section 2) cause skin irritation depending on grain size (powder) (Skin Irrit 2) see sensitization.

Symptoms/Injuries After Eye Contact: Dust generated from material cutting may cause a slight irritation. : Rare earths (section 2) cause eye irritation depending on grain size (powder) (Eye Irrit. 2) Slivers may be generated, which could cause mechanical irritation or injure the eye.

Sensitization: in the case of repeated and prolonged contact with the skin with metallic cobalt there is a possibility of sensitization.

Subacute to chronic toxicity: In certain countries, cobalt in the form of inhalable dust is classified as category 3 carcinogenic.

Additional toxicological information: When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

Carcinogenic categories

7440-48-4	Cobalt	2B
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NTP (National Toxicity Program)	None of the ingredients is listed
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Section 12: Ecological Information (non-mandatory)

12.1 Toxicity

Aquatic Toxicity	No further relevant information available
Persistence and Degradability	No further relevant information available
Behavior in Environmental Systems	
Bio accumulative Potential	No further relevant information available
Mobility in Soil	No further relevant information available
Results of PBT and vPvB Assessment	Not applicable
Other Adverse Effects	No further relevant information available

12.2. Persistence and Degradability: No further relevant information available

12.3. Bio accumulative Potential: No further relevant information available

12.4. Mobility in Soil: No additional information available: No further relevant information available

12.5. Other Adverse Effects: No additional information available

Section 13: Disposal Considerations (non-mandatory)

13.1. Waste treatment methods

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.

Section 14: Transport Information (non-mandatory)

Transport/Additional Information

- 14.1. **Land transport DOT/TDG Remarks:** Non-hazardous goods from the standpoint of the specified regulations. ATTENTION: Packing boxes with magnetized parts inside generate magnetic fields and are able to attract magnetizable materials.
- 14.2. **Transport by Sea IMDG Remarks:** Non-hazardous goods from the standpoint of the specified regulations. ATTENTION: Packing boxes with magnetized parts inside generate magnetic fields and are able to attract magnetizable materials.
- 14.3. **Air Transport ICAO-TI and IATA-DGR: Non magnetized parts:** Not classified as hazardous goods as understood in the ordinance given. Magnetized parts in packaging units: Conduct test for classification as per IATA regulations (see Class 9/Packing Instruction 902) If test is positive, the following apply: ICAO/IATA class: Class 9/Page 172 UN/ID number: 2807
Correct technical name: Magnetized materials

Section 15: Regulatory Information (non-mandatory)

15.1 US Federal Regulations

Safety, health and environmental regulations/legislation specific for the substance or mixture

SARA Section 355 (extremely hazardous substances): None of the ingredients is listed

SARA Section 313 (Specific toxic chemical listings): Cobalt (7440-48-4)

TSCA (Toxic Substances Control Act): All ingredients listed.

Chemicals known to cause reproductive toxicity: Females: None of the ingredients is listed
Males: None of the ingredients is listed

Chemicals known to cause developmental toxicity: None of the ingredients is listed

Carcinogenicity categories

EPA (Environmental Protection Agency): None of the ingredients is listed.

IARC (International Agency for Research on Cancer): Cobalt (7440-48-4) 2B, 2A

NTP (National Toxicology Program): None of the ingredients is listed.

TLV (Threshold Limit Value established by ACGIH): Cobalt (7440-48-4) A3

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 %
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15.2 US State Regulations

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.
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MAK (German Maximum Workplace Concentration): Cobalt (7440-48-4) 2

NIOSH-Ca (National Institute for Occupational Safety and Health): None of the ingredients is listed

OSHA-Ca (Occupational Safety & Health Administration): None of the ingredients is listed

National regulations:

Other regulations, limitations and prohibitive regulations	Guidelines 67/548/ECC, 1999/45/EC 1272/2008/EG (CLP) 1907/2006/EG (REACH) German Hazardous Substances
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PLEASE NOTE:	Magnetized parts generate magnetic fields and are able to attract magnetizable materials. This may result in injury during handling of magnets. Electronic devices and measure tools may be changed in calibration or damaged by the high magnetic field strength. Please keep magnetized magnets away from computers, displays and magnetic storage devices. Especially people with heart pacemakers must keep away from magnetic fields.
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Chemical Safety Assessment: VOID (for articles)

Section 16: Other Information

The information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Relevant phrases (Wording of safety instructions quoted <section 3> concerning pure substances (powder).	Substances and mixtures which in contact with water emit flammable gas	
	H228	Flammable solid
	H315	Cause skin irritation
	H317	May cause an allergic skin reaction
	H319	Causes serious eye irritation
	H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled
	H413	May cause long lasting harmful effects to aquatic life.
	R11	Highly flammable
	R36/38	Irritating to eyes and skin
	R42/43	May cause sensitization by inhalation and skin contact
	R53	May cause long-term adverse effects in aquatic environment.
Department issuing MSDS		
Contact		
Abbreviations and acronyms	IMDG: International Maritime Code for Dangerous Goods IATA : International Air Transport Association ICAO: International Civil Aviation Organization ACGIH : American Conference of Governmental Industrial Hygienists LC60: Lethal Concentration, 50% LD50: Lethal Dose, 50 %	
Sources		

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.