

Product name: Solid Cobalt, 99.99% pure in various forms
Document Nr.: SDS00170CO5720

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Section 1: Identification of the substance or mixture and the company

1.1. Product Identifier

Solid Cobalt (Co), 99.99% pure in various manufactured forms. EC #: 231-158-0 CAS #: 7440-48-4
The substance is not subject to registration according to REACH

1.2 Relevant applications of the material and uses advised against

Target material for vacuum deposition (sputtering and evaporation)

1.3. Company details

Rave Scientific
100 Franklin Square Dr.
Suite 101
Somerset, NJ 08873
Telephone: 1-732-898-3828
Email: info@ravescientific.com
Web: www.ravescientific.com

1.4 Emergency telephone number

Rave Scientific: 1-732-898-3828

Section 2: Hazards identification

2.1. Classification of the substance or mixture according to Regulation EC Nr. 1272/2008

Physical:	Not classified
Health:	Respiratory irritation, category 1, H334 Skin sensitisation, category 1, H317
Flammability:	0
Environment:	Chronic aquatic hazard, category 4, H413
Other hazards:	None

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2.2 Labeling elements

Labelling accordance to Regulation EC. Nr 1272/2008



Hazard pictogram(s):

GHS08

GHS07

GHS09

Signal word:

Danger

Hazard statements:

H317: May cause an allergic skin reaction

H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled

H413: May cause long lasting harmful effects to aquatic life

Precautionary statement(s)

Prevention:

P261: Avoid breathing dust/fume/mist/vapours/spray

P273: Avoid release to the environment

P280: Wear eye protection, face protection, protective clothing, protective gloves

P304 +P340: If inhaled: Remove person to fresh air and keep comfortable breathing

P333+P313: If skin irritation or rash occurs: Get medical advice/attention

P342+P311: If experiencing respiratory problems: call a doctor, a poison center

2.3 Other hazards

Results of PBT and vPvB assessment

According to the results of its assessment, the substance is not a PBT or a vPvB

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Section 3: Composition / information on components

3.1. Substances

Solid cobalt (Co), 99.99% pure in various forms. EC #: 231-158-0 CAS #: 7440-48-4

3.2 Mixtures

Not applicable

Section 4: First aid measures

4.1. Description of first aid measures

Contact with eyes: Rinse cautiously with water for several minutes. If possible, remove contact lenses. Continue rinsing.
Contact with skin: Wash with water and soap.
Inhalation: Fresh air, keep warm and at rest.
Ingestion: If swallowed, do not induce vomiting
Seek immediate medical advice

4.2. Important symptoms and effects, either immediate or delayed

Inhalation: May cause: Cough. Sore throat. Shortness of breath. Asthma reaction
Ingestion: May cause gastrointestinal irritation, nausea, vomiting and diarrhea
Skin contact: May an allergic skin reaction, rash.
Eye contact: May cause erythema (redness)

4.3. Indication of any immediate medical attention and special treatment

General advice: If you feel unwell, seek medical advice; show product label if possible
If symptoms persist, always call a doctor

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Section 5: Firefighting Measures

5.1. Extinguishing media

Dry agent, carbon dioxide. Do not use water.

5.2 Special hazards arising from the substance or mixture

Metal oxide fumes

5.3 Advice to firefighters

Fight fire from a safe distance, with adequate cover
Do not move the load if exposed to heat.
In case of fire: do not breathe fumes
Wear self-contained breathing apparatus for fire fighting

Section 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Wear protective equipment
Keep unprotected persons away
Ensure adequate ventilation

6.2 Environmental precautions

Do not allow to enter public sewers and waterways

6.3 Methods and material for containment and clean up

Pick up mechanically

6.4 Reference to other sections

For further information see section 7, 8 and 13.

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Section 7: Handling and storage

7.1. Precautions for safe handling

Avoid creating or accumulating dust or fine particles
Provide adequate ventilation
Avoid breathing dust or fumes

7.2 Conditions for safe storage, including any incompatibilities

Keep container tightly closed, in a cool, well-ventilated place
Keep away from acids
Keep away from magnets
Keep out of reach of children

7.3 Specific end uses(s)

Not required

Section 8: Exposure control and personal protection

8.1. Control parameters

Occupational exposure limits (OEL)

Ingredient	Material Name	Source	TWA	STEL	Ceiling -C	Notes
Cobalt	Cobalt (Co)	EU	0.1 mg/m ³	0.3 mg/m ³	Not available	Not available

8.2 Exposure controls

Control procedures: Avoid creating or accumulating dust or fine particles
Keep sources of ignition away
Wash hands before breaks and at the end of the work
Maintain appropriate working environment

Personal protection: Protective work clothing

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Inhalation: Use breathing protection with high concentrations (Contd. of page 5)
Hands and skin: Suitable gloves
Eyes: Wear safety goggles with side protection or full-face protection

Section 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance/physical state: Solid in various forms
Colour: Gray metallic
Odour: None
pH: Not applicable
Melting point/range: 1494°C
Boiling point/range: 2927°C
Flash point: Not determined
Evaporation rate: Not available
Explosion limits: upper limit: Not determined
 lower limit: Not determined
Vapour pressure: Not applicable
Relative density: 8.86 g/cm³ @ 20°C
Solubility in water: 2.94mg/l @ 20°C
Auto-ignition: Not determined
Viscosity: Not applicable

9.2 Other information

None

Section 10: Stability and reactivity

10.1. Reactivity

No hazardous reactions known if used for its intended purposes

10.2 Chemical stability

Stable under recommended storage conditions

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10.3 Possibility of hazardous reactions

None known

10.4 Conditions to avoid

Avoid creating dust or accumulating dust or fine particles

10.5 Incompatible materials

Strong oxidizing substances. Acids

10.6 Hazardous decomposition products

Metal oxide fume

Section 11: Toxicological information

11.1. Information on toxicological effects

Information hazard classes as defined in Regulation (EC) Nr. 1272/2008

Inhalation: Not classified
Skin contact: May cause an allergic skin reaction
Eye contact: Not classified
Sensitisation: May cause an allergic reaction in sensitized individuals
Germ cell mutagenicity: Suspected of causing genetic defects
Carcinogenicity: May cause cancer
Reproductive toxicity: May damage fertility
Specific target organ toxicity – single exposure: Not classified
Specific target organ toxicity – repeated exposure: Not classified

Toxicological data:

Ingredient	Toxicity	Irritation
Cobalt	Dermal (rat) LD50: >2000mg/kg	Not classified
	Inhalation (rat) 4h/LC50: 50mg/l	Not classified
	Oral (rat) LD50: 550 mg/kg	Not classified

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11.2. Endocrine disrupting properties

Not listed

11.3. Information on other hazards

There is no additional information

Section 12: Ecological information

12.1. Aquatic toxicity

Very toxic to aquatic life with long lasting effects.

Aquatic toxicity data:

Ingredient	Toxicity
Cobalt (Co)	LC50 fish 1: >1512 mg/l after 96 hrs (acute)
	EC50 aquatic invertebrates: >890ug/l after 48 h (acute)
	ErC50 algae: 144 ug/l after 72 h (acute)
	EC50 aquatic invertebrates: 82.2 ug/l after 21 days (chronic)
	ErC50 algae: 20ug/l after 70h (chronic)

12.2 Persistence and degradability

No information available

12.3 Bio-accumulative potential

Does not significantly accumulate in organisms.

12.4 Mobility in soil

No information available

12.5 Results of PBT and vPvB assessment

Not applicable

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12.6 Endocrine disrupting properties

Not listed

12.7 Other adverse effects

Data are not available

Section 13: Disposal considerations

13.1. Waste treatment methods

Product: This material and its container must be disposed of in a safe way. Do not discharge into drains or the environment, dispose to an authorised waste collection point.

National regulations: Disposal should be in accordance with local, state or national legislation.

Section 14: Transport information

14.1. UN number

UN-number: 3077

14.2 UN proper shipping name

Proper shipping name: Environmentally Hazardous Substance, Solid, N.O.S.

14.3 Transport hazard class(es)

Class: 9
ADR/RID-Classification code: 9

14.4 Packing group

Packing: III

14.5 Environmental Hazards

Hazardous to the aquatic environment

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14.6 Special precautions for user

Transport category (TC):	3
Tunnel restriction code (TRC):	N/A
Classification code:	M7
Special Provisions:	274, 335, 375, 601
Hazard identification No:	90
Excepted quantities EQ):	E1
Limited quantities (LQ):	5 kg
Environmental hazards:	Yes, hazardous to water

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC code

Not applicable

Section 15: Regulatory information

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

Cobalt powder: Dangerous substance with restrictions (REACH, Annex VXII) R28-30, R75

15.2 Chemical safety assessment

List of substances to authorization (REACH, Annex XIV)/SVHC – candidate list: not listed

Section 16: Other information

RoHS Directive Compliant

This product is fully compliant with the directive 2100/65/EU Annex II (RoHS). It does not contain any lead, cadmium, mercury, hexavalent chromium, PBB's or PBDE's.

WEEE

This product is not a piece of electrical or electronic equipment, and it therefore not governed by Directive 2002/96/EC on waste electrical and electronic equipment (WEEE)

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Safety Data Sheet

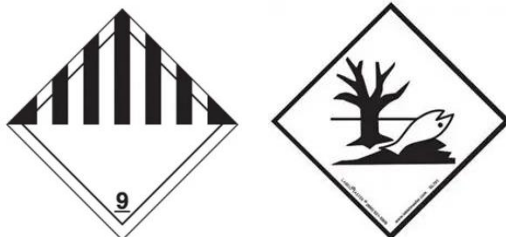
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Shipping labels:



Abbreviations:

Asp. Tox	Aspiration hazard
Carc.	Carcinogenicity
ErC50	Concentration resulting in a 50% reduction in growth rate with 72 hrs exposure
EC50	Half maximal concentration which induces a response halfway between baseline and maximum effect
Exp.	Exposure
Flam.	Flammable
GHS	Global Harmonised System of Classification of Labelling Chemicals
Irrit.	Irritant
N/A	Not applicable
N/E	Not estimated
NOEC	No observed effect concentration
LC50	Lethal dose single exposure to causing 50% lethality
LD50	Lethal dose 50% corresponds to causing 50% lethality during a specific time
PBT	Persistent Bio-accumulative and Toxic
WEL	Workplace Exposure Limit
Repr.	Reproductive toxicant
RoHS	Restriction of Hazardous Substance
SVHC	Substance of very high concern
VOC	Volatile organic compound
vPvB	very Persistent and very Bio-accumulative
WEEE	Waste Electrical and Electronic Equipment

Relevant phrases

- H317 - May cause an allergic skin reaction
- H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled
- H413 - May cause long lasting harmful effects to aquatic life

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This product should be stored, handled and used in accordance with good industrial hygiene practices and in accordance with any legal regulation.

The information contained herewith is based on the present state of our knowledge and is intended to describe the product from the point of view of safety requirements. It does not guarantee any specific properties.

It is the responsibility of the user to query and verify any information seeming suspect or where doubt on the validity may exist. The buyer assumes all responsibility of using and handling the product in accordance with local, state, federal and international regulations.

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