

[Cobalt\(III\) Oxide](#)

[Cobalt\(III\) Oxide Nanoparticles / Nanopowder](#)

<b>Linear Formula</b>	Co <sub>2</sub> O <sub>3</sub>
<b>Pubchem CID</b>	4110762
<b>MDL Number</b>	MFCD00036266
<b>EC No.</b>	215-156-7
<b>IUPAC Name</b>	oxo(oxocobaltiooxy) cobalt
<b>Beilstein Registry No.</b>	N/A
<b>SMILES</b>	[Cd]=O
<b>Inchl Identifier</b>	InChI=1S/2Co.3O
<b>Inchl Key</b>	UPWOEMHINGJHOB-UHFFFAOYSA-N
<b>Signal Word</b>	Warning
<b>Hazard Statements</b>	H302-H317-H351
<b>Hazard Codes</b>	Xn
<b>Precautionary Statements</b>	P280
<b>Flash Point</b>	Not applicable
<b>Risk Codes</b>	22-40-43
<b>Safety Statements</b>	36/37
<b>RTECS Number</b>	GG2900000
<b>Transport Information</b>	NONH
<b>WGK Germany</b>	3

GHS Pictograms

[GHS07  
Exclamation  
Point](#)



[GHS08 Health  
Hazard](#)



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## SAFETY DATA SHEET

Date Accessed: 10/17/2019

Date Revised: 05/15/2015

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### SECTION 1. IDENTIFICATION

**Product Identifiers:** All applicable American Elements product codes for CAS #1308-04-9

**Relevant identified uses of the substance:**  
Scientific research and development

Supplier details:  
American Elements  
10884 Weyburn Ave.  
Los Angeles, CA 90024  
Tel: +1 310-208-0551  
Fax: +1 310-208-0351

Emergency telephone number:  
Domestic, North America +1 800-424-9300  
International +1 703-527-3887

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### SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview  
OSHA Hazards  
Carcinogen, Harmful by ingestion., Skin sensitiser  
GHS Classification  
Acute toxicity, Oral(Category 4)  
Skin sensitization(Category 1)  
Carcinogenicity(Category 2)  
GHS Label elements, including precautionary statements  
Pictogram



Signal word

Warning

Hazard statement(s)

H302

Harmful if swallowed.

H317

May cause an allergic skin reaction.

H351

Suspected of causing cancer.

Precautionary statement(s)

P280

Wear protective gloves.

HMIS

Classification

Health hazard: 2

Chronic Health Hazard:\*

Flammability: 0

Physical hazards: 0

NFPA Rating

Health hazard: 2

Fire: 0

Reactivity Hazard: 0

Potential Health Effects

Inhalation

May be harmful if inhaled. May cause respiratory tract irritation.

Skin

May be harmful if absorbed through skin. May cause skin irritation.

Eyes

May cause eye irritation.

Ingestion

Toxic if swallowed.

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### **SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

Formula:  $\text{Co}_2\text{O}_3$

Molecular Weight: 165.86 g/mol

CAS-No.

1308-04-9

EC-No.

215-156-7

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### **SECTION 4. FIRST AID MEASURES**

General advice

Consult a physician. Show this safety data sheet to

the doctor in attendance.

Move out of dangerous area.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

In case of eye contact

Flush eyes with water as a precaution.

If swallowed

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

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## **SECTION 5. FIREFIGHTING MEASURES**

Suitable extinguishing media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Special protective equipment for firefighters

Wear self contained breathing apparatus for fire fighting if necessary.

Hazardous combustion products

Hazardous decomposition products formed under fire conditions.-Cobalt/cobalt oxides

Hazardous decomposition products formed under fire conditions.-Cobalt/cobalt oxides

Further information

The product itself does not burn.

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## **SECTION 6. ACCIDENTAL RELEASE MEASURES**

Personal precautions

Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas.

Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust.

Sweep up and shovel. Keep in suitable, closed containers for disposal.

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## **SECTION 7. HANDLING AND STORAGE**

Precautions for safe handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols.

Provide appropriate exhaust ventilation at places where dust is formed.

Conditions for safe storage

Keep container tightly closed in a dry and well-ventilated place.

Keep in a dry place.

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## **SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

Personal protective equipment

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye protection

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection

Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

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## **SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

Appearance

Form  
powder  
Colour  
black  
Safety data  
pH  
no data available  
Melting point/freezing point  
no data available  
Boiling point  
no data available  
Flash point  
not applicable  
Ignition temperature  
no data available  
Autoignition temperature  
no data available  
Lower explosion limit  
no data available  
Upper explosion limit  
no data available  
Vapor pressure  
no data available  
Density  
5.700 g/cm<sup>3</sup> at 20 °C (68 °F)  
5.700 g/cm<sup>3</sup> at 20 °C (68 °F)  
Water solubility  
no data available  
Partition coefficient: n-octanol/water  
no data available  
Relative Vapor density  
no data available  
Odor  
odourless  
Odor Threshold  
no data available  
Evaporation rate  
no data available

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## **SECTION 10. STABILITY AND REACTIVITY**

Chemical stability  
Stable under recommended storage conditions.  
Possibility of hazardous reactions  
no data available  
Conditions to avoid  
no data available  
Materials to avoid  
Strong oxidizing agents  
Hazardous decomposition products  
Hazardous decomposition products formed under fire  
conditions.-Cobalt/cobalt oxides  
Hazardous decomposition products formed under fire

conditions.-Cobalt/cobalt oxides  
Other decomposition products-no data available

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## **SECTION 11. TOXICOLOGICAL INFORMATION**

Acute toxicity

Oral LD50

Inhalation LC50

no data available

Dermal LD50

no data available

Other information on acute toxicity

LD50 Subcutaneous-mouse-2,064 mg/kg

LD50 Subcutaneous-mouse-2,064 mg/kg

Skin corrosion/irritation

no data available

Serious eye damage/eye irritation

no data available

Respiratory or skin sensitization

May cause allergic skin reaction.

Germ cell mutagenicity

no data available

Carcinogenicity

This product is or contains a component that has been reported to be possibly carcinogenic based on its IARC, ACGIH, NTP, or EPA classification.

Limited evidence of carcinogenicity in animal studies

IARC:

2B-Group 2B: Possibly carcinogenic to humans(Dicobalt trioxide)

NTP:

No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA:

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity

no data available

Teratogenicity

no data available

Specific target organ toxicity -single exposure(Globally Harmonized System)

no data available

Specific target organ toxicity -repeated exposure(Globally Harmonized System)

no data available

Aspiration hazard

no data available

Potential health effects

Inhalation

May be harmful if inhaled. May cause respiratory tract irritation.

Ingestion

Toxic if swallowed.

Skin

May be harmful if absorbed through skin. May cause skin irritation.

Eyes

May cause eye irritation.

Synergistic effects

no data available

Additional Information

RTECS: GG2900000

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## **SECTION 12. ECOLOGICAL INFORMATION**

Toxicity

no data available

Persistence and degradability

no data available

Bioaccumulative potential

no data available

Mobility in soil

no data available

PBT and vPvB assessment

no data available

Other adverse effects

no data available

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## **SECTION 13. DISPOSAL CONSIDERATIONS**

Product

Offer surplus and non-recyclable solutions to a licensed disposal company.

Contact a licensed professional waste disposal service to dispose of this material.

Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging

Dispose of as unused product.

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## **SECTION 14. TRANSPORT INFORMATION**

DOT (US)

Not dangerous goods

IMDG

Not dangerous goods

IATA



Not dangerous goods

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## **SECTION 15. REGULATORY INFORMATION**

OSHA Hazards

Carcinogen, Harmful by ingestion., Skin sensitiser

SARA 302 Components

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

SARA 313 Components

The following components are subject to reporting levels established by SARA Title III, Section 313:

Dicobalt trioxide

CAS-No.

1308-04-9

SARA 311/312 Hazards

Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know Components

Dicobalt trioxide

CAS-No.

1308-04-9

New Jersey Right To Know Components

Dicobalt trioxide

CAS-No.

1308-04-9

California Prop. 65 Components

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

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## **16. OTHER INFORMATION**

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH). The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. American Elements shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. COPYRIGHT 1997-2016 AMERICAN ELEMENTS. LICENSED GRANTED TO

## Research

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- A direct route to activated two-dimensional cobalt oxide nanosheets for electrochemical energy storage, catalytic and environmental applications. J. M. Munuera, J. I. Paredes, S. Villar-Rodil, S. García-Dalí, J. M. D. Tascón. *Journal of Colloid and Interface Science*, Volume 539, 15 March 2019, Pages 263-276.
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