

Cobalt(II) Titanate		Pricing >
Linear Formula	CoTiO ₃	
Pubchem CID	159395	
MDL Number	N/A	
EC No.	N/A	
IUPAC Name	cobalt(2+); oxygen(2-); titanium(4+)	
Beilstein/Reaxys No.	N/A	
SMILES	[Co+2].[Ti+4].[O-2].[O-2].[O-2]	
Inchl Identifier	InChI=1S/Co.3O.Ti/q+2;3*-2;+4	
Inchl Key	LFSBSHDDAGNCTM-UHFFFAOYSA-N	
Signal Word	N/A	
Hazard Statements	N/A	
Hazard Codes	N/A	
Risk Codes	N/A	
Safety Statements	N/A	
Transport Information	N/A	

[Create Printable PDF](#)

SAFETY DATA SHEET

Date Accessed: 05/26/2024

Date Revised: 01/15/2022

SECTION 1. IDENTIFICATION

Product Identifiers: All applicable American Elements product codes for CAS #12017-01-5

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:

SECTION 2. HAZARDS IDENTIFICATION

Classification of the substance or mixture in accordance with 29 CFR 1910 (OSHA HCS)

GHS08 Health hazard

Resp. Sens. 1 H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

GHS07

Skin Irrit. 2 H315 Causes skin irritation.

Eye Irrit. 2A H319 Causes serious eye irritation.

Skin Sens. 1 H317 May cause an allergic skin reaction.

STOT SE 3 H335 May cause respiratory irritation.

Hazards not otherwise classified

No data available

GHS label elements

GHS label elements, including precautionary statements

Hazard pictograms



GHS07 GHS08

Signal word

Danger

Hazard statements

H315 Causes skin irritation.

H319 Causes serious eye irritation.

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

H317 May cause an allergic skin reaction.

H335 May cause respiratory irritation.

Precautionary statements

P284 In case of inadequate ventilation wear respiratory protection.

P261 Avoid breathing dust/fume/gas/mist/vapors/spray.

P280 Wear protective gloves/protective clothing/eye protection/face 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.

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

WHMIS classification

D2A - Very toxic material causing other toxic effects

Classification system

HMIS ratings (scale 0-4)
(Hazardous Materials Identification System)
HEALTH
FIRE
REACTIVITY
1
0
1
Health (acute effects) = 1
Flammability = 0
Physical Hazard = 1
Other hazards
Results of PBT and vPvB assessment
PBT:
N/A
vPvB:
N/A

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substances
CAS No. / Substance Name:
12017-01-5 Cobalt titanium oxide
Identification number(s):
EC number:
234-615-2

SECTION 4. FIRST AID MEASURES

Description of first aid measures
If inhaled:
Supply patient with fresh air. If not breathing, provide artificial respiration. Keep patient warm.
Seek immediate medical advice.
In case of skin contact:
Immediately wash with soap and water; rinse thoroughly.
Seek immediate medical advice.
In case of eye contact:
Rinse opened eye for several minutes under running water. Consult a physician.
If swallowed:
Seek medical treatment.
Information for doctor
Most important symptoms and effects, both acute and delayed
No data available
Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5. FIREFIGHTING MEASURES

Extinguishing media

Suitable extinguishing agents

Product is not flammable. Use fire-fighting measures that suit the surrounding fire.

Special hazards arising from the substance or mixture

If this product is involved in a fire, the following can be released:

Cobalt oxides

Titanium oxides

Advice for firefighters

Protective equipment:

Wear self-contained respirator.

Wear fully protective impervious suit.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

Environmental precautions:

Do not allow product to enter drains, sewage systems, or other water courses.

Methods and materials for containment and cleanup:

Dispose of contaminated material as waste according to section 13.

Ensure adequate ventilation.

Prevention of secondary hazards:

No special measures required.

Reference to other sections

See Section 7 for information on safe handling

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

SECTION 7. HANDLING AND STORAGE

Handling

Precautions for safe handling

Keep container tightly sealed.

Store in cool, dry place in tightly closed containers.

Ensure good ventilation at the workplace.

Prevent formation of dust.

Information about protection against explosions and fires:

The product is not flammable

Conditions for safe storage, including any incompatibilities
Requirements to be met by storerooms and receptacles:
No special requirements.
Information about storage in one common storage facility:
Store away from oxidizing agents.
Further information about storage conditions:
Keep container tightly sealed.
Store in cool, dry conditions in well-sealed containers.
Specific end use(s)
No data available

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Additional information about design of technical systems:
Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.
Control parameters
Components with limit values that require monitoring at the workplace:
None.
Additional information:
No data
Exposure controls
Personal protective equipment
Follow typical protective and hygienic practices for handling chemicals.
Keep away from foodstuffs, beverages and feed.
Remove all soiled and contaminated clothing immediately.
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.
Maintain an ergonomically appropriate working environment.
Breathing equipment:
Use suitable respirator when high concentrations are present.
Recommended filter device for short term use:
Use a respirator with type N95 (USA) or PE (EN 143) cartridges as a backup to engineering controls. Risk assessment should be performed to determine if air-purifying respirators are appropriate. Only use equipment tested and approved under appropriate government standards.
Protection of hands:
Impervious gloves
Inspect gloves prior to use.
Suitability of gloves should be determined both by

material and quality, the latter of which may vary by manufacturer.

Eye protection:

Safety glasses

Body protection:

Protective work clothing.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance:

Form: Powder

Odor: No data available

Odor threshold: No data available.

pH: N/A

Melting point/Melting range: No data available

Boiling point/Boiling range: No data available

Sublimation temperature / start: No data available

Flammability (solid, gas)

No data available.

Ignition temperature: No data available

Decomposition temperature: No data available

Autoignition: No data available.

Danger of explosion: No data available.

Explosion limits:

Lower: No data available

Upper: No data available

Vapor pressure: N/A

Density: No data available

Relative density

No data available.

Vapor density

N/A

Evaporation rate

N/A

Solubility in Water (H₂O): Insoluble

Partition coefficient (n-octanol/water): No data available.

Viscosity:

Dynamic: N/A

Kinematic: N/A

Other information

No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity

No data available

Chemical stability

Stable under recommended storage conditions.

Thermal decomposition / conditions to be avoided:
Decomposition will not occur if used and stored according to specifications.
Possibility of hazardous reactions
Reacts with strong oxidizing agents
Conditions to avoid
No data available
Incompatible materials:
Oxidizing agents
Hazardous decomposition products:
Cobalt oxides
Titanium oxides

SECTION 11. TOXICOLOGICAL INFORMATION

Information on toxicological effects
Acute toxicity:
No effects known.
LD/LC50 values that are relevant for classification:
No data
Skin irritation or corrosion:
Causes skin irritation.
Eye irritation or corrosion:
Causes serious eye irritation.
Sensitization:
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause an allergic skin reaction.
Germ cell mutagenicity:
No effects known.
Carcinogenicity:
No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.
Reproductive toxicity:
No effects known.
Specific target organ system toxicity - repeated exposure:
No effects known.
Specific target organ system toxicity - single exposure:
May cause respiratory irritation.
Aspiration hazard:
No effects known.
Subacute to chronic toxicity:
No effects known.
Additional toxicological information:
To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

SECTION 12. ECOLOGICAL INFORMATION

Toxicity

Aquatic toxicity:

No data available

Persistence and degradability

No data available

Bioaccumulative potential

No data available

Mobility in soil

No data available

Additional ecological information:

Avoid transfer into the environment.

Results of PBT and vPvB assessment

PBT:

N/A

vPvB:

N/A

Other adverse effects

No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Recommendation

Consult official regulations to ensure proper disposal.

Uncleaned packagings:

Recommendation:

Disposal must be made according to official regulations.

SECTION 14. TRANSPORT INFORMATION

UN-Number

DOT, ADN, IMDG, IATA

N/A

UN proper shipping name

DOT, ADN, IMDG, IATA

N/A

Transport hazard class(es)

DOT, ADR, ADN, IMDG, IATA

Class

N/A

Packing group

DOT, IMDG, IATA

N/A

Environmental hazards:

N/A

Special precautions for user

N/A

Transport in bulk according to Annex II of

MARPOL73/78 and the IBC Code
N/A
Transport/Additional information:
DOT
Marine Pollutant (DOT):
No

SECTION 15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture
GHS GHS label elements, including precautionary statements
Hazard pictograms
GHS07
GHS08
Signal word
Danger
Hazard statements
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317 May cause an allergic skin reaction.
H335 May cause respiratory irritation.
Precautionary statements
P284 In case of inadequate ventilation wear respiratory protection.
P261 Avoid breathing dust/fume/gas/mist/vapors/spray.
P280 Wear protective gloves/protective clothing/eye protection/face 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.
P405 Store locked up.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.
National regulations
All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.
All components of this product are listed on the Canadian Non-Domestic Substances List (NDSL).
SARA Section 313 (specific toxic chemical listings)
12017-01-5 Cobalt titanium oxide
California Proposition 65
Prop 65 - Chemicals known to cause cancer
Substance is not listed.
Prop 65 - Developmental toxicity

Substance is not listed.
Prop 65 - Developmental toxicity, female
Substance is not listed.
Prop 65 - Developmental toxicity, male
Substance is not listed.
Information about limitation of use:
For use only by technically qualified individuals.
Other regulations, limitations and prohibitive regulations
Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006.
Substance is not listed.
The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed.
Substance is not listed.
Annex XIV of the REACH Regulations (requiring Authorisation for use)
Substance is not listed.
Chemical safety assessment:
A Chemical Safety Assessment has not been carried out.

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 1997-2022 AMERICAN ELEMENTS. LICENSED GRANTED TO MAKE UNLIMITED PAPER COPIES FOR INTERNAL USE ONLY.

Research

- A thermogravimetric study of CoTiO₃ as oxygen carrier for chemical looping combustion. Jong Ha Hwang, Eun Nam Son, Roosse Lee, Soo Hyun Kim, Jung Min Sohn. Catalysis Today, Volume 303, 1 April 2018,

Pages 13-18.

- High-response mixed-potential type planar YSZ-based NO₂ sensor coupled with CoTiO₃ sensing electrode. Jing Wang, Caileng Wang, Ao Liu, Rui You, Geyu Lu. *Sensors and Actuators B: Chemical*, Volume 287, 15 May 2019, Pages 185-190.
- CoTiO₃/Ag₃VO₄ composite: A study on the role of CoTiO₃ and the active species in the photocatalytic degradation of methylene blue. Kanlayawat Wangkawong, Sukon Phanichphant, Doldet Tantraviwat, Burapat Inceesungvorn. *Journal of Colloid and Interface Science*, Volume 454, 15 September 2015, Pages 210-215.
- rGO/CoTiO₃ nanocomposite with enhanced gas sensing performance at low working temperature. Jing Lu, Na Jia, Long Cheng, Kuoyi Liang, Jiayin Li. *Journal of Alloys and Compounds*, Volume 739, 30 March 2018, Pages 227-234.
- Thermal expansion, compressibility and bulk modulus of ilmenite-type CoTiO₃: X-ray diffraction at high pressures and temperatures. T. R. Cunha, A. D. Rodrigues, J. E. Rodrigues, D. V. Sampaio, P. S. Pizani. *Solid State Sciences*, Volume 88, February 2019, Pages 1-5.
- Porous CoTiO₃ microbars as super rate and long life anodes for sodium ion batteries. Yiwei Tang, Lijue Wu, Li Xiao, Dingqiang Wen, Weichun Liang. *Ceramics International*, Volume 44, Issue 15, 15 October 2018, Pages 18025-18031.
- Effect of the seed layer on surface morphology and humidity sensing property of CoTiO₃ nanocrystalline film. Jing Lu, Long Cheng, Yabin Zhang, Jianfeng Huang, Cuiyan Li. *Ceramics International*, Volume 43, Issue 7, May 2017, Pages 5823-5827.
- Photocatalytic degradation of amitriptyline, trazodone and venlafaxine using modified cobalt-titanate nanowires under UV–Vis radiation: Transformation products and in silico toxicity. Rodrigo A. Osawa, Beatriz T. Barrocas, Olinda C. Monteiro, M. Conceição Oliveira, M. Helena Florêncio. *Chemical Engineering Journal*, Volume 373, 1 October 2019, Pages 1338-1347.
- Electrospun nanofiber of cobalt titanate perovskite as an enhanced heterogeneous catalyst for activating peroxydisulfate in water. Kun-Yi Andrew Lin, Tien-Yu Lin, Yi-Chun Lu, Jyun-Ting Lin, Yi-Feng Lin. *Chemical Engineering Science*, Volume 168, 31 August 2017, Pages 372-379.
- Role of entropy in the stability of cobalt titanates. K. T. Jacob, G. Rajitha. *The Journal of Chemical Thermodynamics*, Volume 42, Issue 7, July 2010, Pages 879-885.