

[Vanadium Pentoxide](#)

[Vanadium Pentoxide Sputtering Target](#)

[Vanadium\(V\) Oxide](#)

<b>Linear Formula</b>	V <sub>2</sub> O <sub>5</sub>
<b>Pubchem CID</b>	14814
<b>MDL Number</b>	MFCD00011457
<b>EC No.</b>	215-239-8
<b>IUPAC Name</b>	Vanadium Pentaoxide
<b>Beilstein/Reaxys No.</b>	N/A
<b>SMILES</b>	O=[V](=O)O[V](=O)=O
<b>Inchl Identifier</b>	InChI=1S/5O.2V
<b>Inchl Key</b>	GNTDGMZSJNCJJK-UHFFFAOYSA-N
<b>Signal Word</b>	Danger
<b>Hazard Statements</b>	H302 + H332-H318-H335-H341-H361d-H372-H411
<b>Hazard Codes</b>	T,Xn,N
<b>Precautionary Statements</b>	P201-P261-P273-P280-P305 + P351 + P338 + P310-P501
<b>Flash Point</b>	Not applicable
<b>Risk Codes</b>	63-20/22-37-48/23-51/53-68
<b>Safety Statements</b>	36/37-38-45-61
<b>Transport Information</b>	UN 2862 6.1 / PGIII
<b>WGK Germany</b>	3

GHS Pictograms	<a href="#"><u>GHS05 Corrosive</u></a>
	
	<a href="#"><u>GHS09 Environment</u></a>
	
	<a href="#"><u>GHS07 Exclamation Point</u></a>
	
	<a href="#"><u>GHS08 Health Hazard</u></a>
	

[Create Printable PDF](#)

## SAFETY DATA SHEET

Date Accessed: 07/08/2020

Date Revised: 05/15/2015

### SECTION 1. IDENTIFICATION

**Product Identifiers:** All applicable American Elements product codes for CAS #1314-62-1

**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

### SECTION 2. HAZARDS IDENTIFICATION

Classification of the substance or mixture in accordance with 29 CFR 1910 (OSHA HCS)  
GHS08 Health hazard  
Muta. 2 H341 Suspected of causing genetic defects.  
Repr. 2 H361 Suspected of damaging fertility or the unborn child.  
STOT RE 1 H372 Causes damage to the lung, the liver, the heart, the blood, the brain and the endocrine system through prolonged or repeated exposure.  
Route  
of exposure: Inhalative.

GHS07

Acute Tox. 4 H302 Harmful if swallowed.

Acute Tox. 4 H332 Harmful if inhaled.

STOT SE 3 H335 May cause respiratory irritation.

Hazards not otherwise classified No data available

GHS label elements, including precautionary statements

Hazard pictograms



GHS07 GHS08

Signal word Danger

Hazard statements

H302+H332 Harmful if swallowed or if inhaled.

H341 Suspected of causing genetic defects.

H361 Suspected of damaging fertility or the unborn child.

H335 May cause respiratory irritation.

H372 Causes damage to the lung, the liver, the heart, the blood, the brain and the endocrine system through prolonged or repeated exposure. Route of exposure: Inhalative.

Precautionary statements

P260 Do not breathe dust/fume/gas/mist/vapors/spray.

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

P281 Use personal protective equipment as required.

P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P405 Store locked up.

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

WHMIS classification

D1B - Toxic material causing immediate and serious toxic effects

D2A - Very toxic material causing other toxic effects

Classification system

HMIS ratings (scale 0-4)

(Hazardous Materials Identification System)

HEALTH

FIRE

REACTIVITY

2

0

1

Health (acute effects) = 2

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:

1314-62-1 Vanadium(V) oxide

Identification number(s):

EC number: 215-239-8

Index number: 023-001-00-8

---

### **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:

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 material to be released to the environment without official permits.

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.

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**

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:

1314-62-1 Vanadium(V) oxide (100.0%)

PEL (USA) Ceiling limit value: 0.5\* C 0.1\*\* mg/m<sup>3</sup>  
as V<sub>2</sub>O<sub>5</sub>,\*respirable dust \*\*fume

REL (USA) Ceiling limit value: 0.05\* mg/m<sup>3</sup>  
\*15-min, except V metal and carbide

TLV (USA) Long-term value: 0.05\* mg/m<sup>3</sup>  
\*as inhalable fraction

EL (Canada) Short-term value: C 0.05\*\* mg/m<sup>3</sup>

Long-term value: 0.2\* mg/m<sup>3</sup>

IARC 2B;\*total dust;\*\*respirable dust & fume

EV (Canada) Long-term value: 0.05 mg/m<sup>3</sup>  
respirable dust and fume

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.

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 P100 (USA) or P3 (EN 143) cartridges as a backup to engineering controls. Risk assessment should be performed to determine if airpurifying

respirators are appropriate. Only use equipment tested and approved under appropriate government standards.

Protection of hands:

Impervious gloves

Inspect gloves prior to use.

The selection of suitable gloves not only depends on the material, but also on quality. Quality will vary from manufacturer to manufacturer.

Material of gloves Nitrile rubber, NBR

Penetration time of glove material (in minutes) 480

Glove thickness 0.11 mm

Eye protection: Safety glasses

Body protection: Protective work clothing.

---

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

General Information

Appearance:  
Form: Powder or solid  
Color: Various colors  
Odor: Odorless  
Odor threshold: No data available.  
pH: N/A  
Melting point/Melting range: 690 °C (1274 °F)  
Boiling point/Boiling range: 1750 °C (3182 °F) (dec)  
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 at 20 °C (68 °F): 3.357 g/cm<sup>3</sup> (28.014 lbs/gal)  
Relative density No data available.  
Vapor density N/A  
Evaporation rate N/A  
Solubility in / Miscibility with  
Water at 20 °C (68 °F): 8 g/l  
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

---

## **SECTION 11. TOXICOLOGICAL INFORMATION**

Information on toxicological effects  
Acute toxicity:  
Harmful if inhaled.  
Harmful if swallowed.

The Registry of Toxic Effects of Chemical Substances (RTECS) contains acute toxicity data for this substance.

LD/LC50 values that are relevant for classification: No data

Skin irritation or corrosion: May cause irritation

Eye irritation or corrosion: May cause irritation

Sensitization: No sensitizing effects known.

Germ cell mutagenicity: Suspected of causing genetic defects.

Carcinogenicity:

IARC-2B: Possibly carcinogenic to humans: limited evidence in humans in the absence of sufficient evidence in experimental animals.

ACGIH A3: Animal carcinogen: Agent is carcinogenic in experimental animals at a relatively high dose, by route(s) of administration, at site(s), of histologic type(s),

or by mechanism(s) not considered relevant to worker exposure. Available epidemiologic studies do not confirm an increased risk of cancer in exposed humans.

Available evidence suggests that the agent is not likely to cause cancer in humans except under uncommon or unlikely routes or levels of exposure.

The Registry of Toxic Effects of Chemical Substances (RTECS) contains tumorigenic and/or carcinogenic and/or neoplastic data for this substance.

Reproductive toxicity: Suspected of damaging fertility or the unborn child.

Specific target organ system toxicity - repeated exposure:

Causes damage to the lung, the liver, the heart, the blood, the brain and the endocrine system through prolonged or repeated exposure. Route of exposure: Inhalative.

Specific target organ system toxicity - single exposure: May cause respiratory irritation.

Aspiration hazard: No effects known.

Subacute to chronic toxicity: The Registry of Toxic Effects of Chemical Substances (RTECS) contains multiple dose toxicity data for this substance.

Additional toxicological information: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

Carcinogenic categories

OSHA-Ca (Occupational Safety & Health Administration) Substance is not listed.

---

## **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:  
Do not allow material to be released to the environment without official permits.  
Do not allow product to reach groundwater, water courses, or sewage systems, even in small quantities.  
Danger to drinking water if even extremely small quantities leak into the ground.  
Also poisonous for fish and plankton in water bodies.  
Toxic to aquatic life.  
May cause long lasting harmful effects to aquatic life.  
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**

DOT, IMDG, IATA UN2862  
UN proper shipping name  
DOT Vanadium pentoxide  
IMDG, IATA VANADIUM PENTOXIDE  
Transport hazard class(es)  
DOT  
Class 6.1 Toxic substances.  
Label 6.1  
Class 6.1 (T5) Toxic substances  
Label 6.1  
IMDG, IATA  
Class 6.1 Toxic substances.  
Label 6.1  
Packing group  
DOT, IMDG, IATA III  
Environmental hazards: Environmentally hazardous substance, solid  
Special precautions for user Warning: Toxic substances  
EMS Number: F-A,S-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  
UN "Model Regulation": UN2862, Vanadium  
pentoxide, 6.1, III

---

## **SECTION 15. REGULATORY INFORMATION**

Safety, health and environmental  
regulations/legislation specific for the substance or  
mixture  
GHS label elements, including precautionary  
statements  
Hazard pictograms  
GHS07 GHS08  
Signal word Danger  
Hazard statements  
H302+H332 Harmful if swallowed or if inhaled.  
H341 Suspected of causing genetic defects.  
H361 Suspected of damaging fertility or the unborn  
child.  
H335 May cause respiratory irritation.  
H372 Causes damage to the lung, the liver, the heart,  
the blood, the brain and the endocrine system through  
prolonged or repeated exposure. Route of  
exposure: Inhalative.  
Precautionary statements  
P260 Do not breathe  
dust/fume/gas/mist/vapors/spray.  
P261 Avoid breathing  
dust/fume/gas/mist/vapors/spray.  
P281 Use personal protective equipment as required.  
P304+P340 IF INHALED: Remove victim to fresh air  
and keep at rest in a position comfortable for  
breathing.  
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 Domestic Substances List (DSL).  
SARA Section 313 (specific toxic chemical listings)  
1314-62-1 Vanadium(V) oxide  
California Proposition 65  
Prop 65 - Chemicals known to cause cancer  
1314-62-1 Vanadium(V) oxide  
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 1997-2016 AMERICAN ELEMENTS. LICENSED GRANTED TO MAKE UNLIMITED PAPER COPIES FOR INTERNAL USE ONLY.

---