

**SECTION 1: Identification****1.1. Identification**

Product form	: Substance
Substance name	: VANADIUM PENTOXIDE
Chemical name	: divanadium pentaoxide; vanadium pentoxide
CAS-No.	: 1314-62-1
Product code	: AR636, AEB1187, AEB4001, AEB4008, AEB4010
Formula	: O5V2
Synonyms	: VANADIUM (V) OXIDE; DIVANADIUM PENTOXIDE

**1.2. Recommended use and restrictions on use**

Use of the substance/mixture : Laboratory chemicals

**1.3. Supplier**

Alpha Resources LLC  
3090 Johnson Rd.  
Stevensville, Michigan 49127  
USA  
T (269)465-5559  
[info@alpharesources.com](mailto:info@alpharesources.com) - [www.alpharesources.com](http://www.alpharesources.com)

**1.4. Emergency telephone number**

Emergency number : CHEMTREC Emergency Phone Number: (800) 424-9300

**SECTION 2: Hazard(s) identification****2.1. Classification of the substance or mixture****GHS US classification**

Acute toxicity (oral) Category 3	H301	Toxic if swallowed
Carcinogenicity Category 2	H351	Suspected of causing cancer
Specific target organ toxicity (repeated exposure) Category 2	H373	May cause damage to organs through prolonged or repeated exposure
Full text of H statements : see section 16		

**2.2. GHS Label elements, including precautionary statements****GHS US labeling**

Hazard pictograms (GHS US) :



Signal word (GHS US) :

Danger

Hazard statements (GHS US) :

H301 - Toxic if swallowed  
H351 - Suspected of causing cancer  
H373 - May cause damage to organs through prolonged or repeated exposure

Precautionary statements (GHS US) :

P201 - Obtain special instructions before use.  
P202 - Do not handle until all safety precautions have been read and understood.  
P260 - Do not breathe dust/fume/gas/mist/vapors/spray.  
P264 - Wash hands, forearms and face thoroughly after handling.  
P270 - Do not eat, drink or smoke when using this product.  
P280 - Wear protective gloves/protective clothing/eye protection/face protection.  
P301+P310 - If swallowed: Immediately call a poison center or doctor.  
P308+P313 - If exposed or concerned: Get medical advice/attention.  
P314 - Get medical advice/attention if you feel unwell.  
P321 - Specific treatment (see supplemental first aid instruction on this label).  
P330 - Rinse mouth.  
P405 - Store locked up.

# VANADIUM PENTOXIDE

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

### 2.3. Other hazards which do not result in classification

No additional information available

### 2.4. Unknown acute toxicity (GHS US)

No additional information available

## SECTION 3: Composition/Information on ingredients

### 3.1. Substances

Substance type : Mono-constituent  
Name : VANADIUM PENTOXIDE  
CAS-No. : 1314-62-1

Name	Product identifier	%	GHS US classification
VANADIUM PENTOXIDE	CAS-No.: 1314-62-1	100	Acute Tox. 3 (Oral), H301 Carc. 2, H351 STOT RE 2, H373

Full text of hazard classes and H-statements : see section 16

### 3.2. Mixtures

Not applicable

## SECTION 4: First-aid measures

### 4.1. Description of first aid measures

First-aid measures general : Call a physician immediately.  
First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing.  
First-aid measures after skin contact : Wash skin with plenty of water.  
First-aid measures after eye contact : Rinse eyes with water as a precaution.  
First-aid measures after ingestion : Rinse mouth. Call a physician immediately.

### 4.2. Most important symptoms and effects (acute and delayed)

No additional information available

### 4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically.

## SECTION 5: Fire-fighting measures

### 5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Water spray. Dry powder. Foam.

### 5.2. Specific hazards arising from the chemical

Hazardous decomposition products in case of fire : Toxic fumes may be released.

### 5.3. Special protective equipment and precautions for fire-fighters

Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

#### 6.1.1. For non-emergency personnel

Emergency procedures : Ventilate spillage area. Do not breathe dust/fume/gas/mist/vapors/spray.

# VANADIUM PENTOXIDE

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

### 6.1.2. For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

### 6.2. Environmental precautions

Avoid release to the environment.

### 6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Mechanically recover the product. Notify authorities if product enters sewers or public waters.  
Other information : Dispose of materials or solid residues at an authorized site.

### 6.4. Reference to other sections

For further information refer to section 13.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

Precautions for safe handling : Ensure good ventilation of the work station. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear personal protective equipment. Do not breathe dust/fume/gas/mist/vapors/spray.

Hygiene measures : Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

### 7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store locked up. Store in a well-ventilated place. Keep cool.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

VANADIUM PENTOXIDE (1314-62-1)	
<b>USA - ACGIH - Occupational Exposure Limits</b>	
Local name	Vanadium pentoxide, as V
ACGIH OEL TWA	0.05 mg/m <sup>3</sup> (I - Inhalable particulate matter)
Remark (ACGIH)	TLV® Basis: URT & LRT irr. Notations: A3 (Confirmed Animal Carcinogen with Unknown Relevance to Humans)
Regulatory reference	ACGIH 2024
<b>USA - OSHA - Occupational Exposure Limits</b>	
Local name	Vanadium
OSHA PEL C	0.5 mg/m <sup>3</sup> (Respirable dust (as V2O5)) 0.1 mg/m <sup>3</sup> (Fume (as V2O5))
Regulatory reference (US-OSHA)	OSHA Annotated Table Z-1
<b>VANADIUM PENTOXIDE (1314-62-1)</b>	
<b>USA - ACGIH - Occupational Exposure Limits</b>	
Local name	Vanadium pentoxide, as V
ACGIH OEL TWA	0.05 mg/m <sup>3</sup> (I - Inhalable particulate matter)
Remark (ACGIH)	TLV® Basis: URT & LRT irr. Notations: A3 (Confirmed Animal Carcinogen with Unknown Relevance to Humans)
Regulatory reference	ACGIH 2024
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Local name	Vanadium

# VANADIUM PENTOXIDE

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

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OSHA PEL C	0.5 mg/m <sup>3</sup> (Respirable dust (as V2O5)) 0.1 mg/m <sup>3</sup> (Fume (as V2O5))
Regulatory reference (US-OSHA)	OSHA Annotated Table Z-1

### 8.2. Appropriate engineering controls

Appropriate engineering controls : Ensure good ventilation of the work station.  
Environmental exposure controls : Avoid release to the environment.

### 8.3. Individual protection measures/Personal protective equipment

<b>Hand protection:</b>
Protective gloves
<b>Eye protection:</b>
Safety glasses
<b>Skin and body protection:</b>
Wear suitable protective clothing
<b>Respiratory protection:</b>
In case of insufficient ventilation, wear suitable respiratory equipment

#### Personal protective equipment symbol(s):



## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Physical state	: Solid
Color	: Orange
Odor	: odorless
Odor threshold	: No data available
pH	: 4
Melting point	: 671 °C Source: ECHA
Freezing point	: Not applicable
Boiling point	: 1750 °C Source: ECHA
Flash point	: Not applicable
Relative evaporation rate (butyl acetate=1)	: No data available
Flammability (solid, gas)	: Non flammable.
Vapor pressure	: No data available
Relative vapor density at 20°C	: No data available
Relative density	: 3.65 Source: ECHA
Density	: 3.65 g/cm <sup>3</sup> Type: 'density' Temp.: 21,7 °C
Molecular mass	: 181.879 g/mol Source: ChemIDPlus
Solubility	: Water: 0.92 g/l
Partition coefficient n-octanol/water (Log Pow)	: No data available
Auto-ignition temperature	: Not applicable
Decomposition temperature	: No data available
Viscosity, kinematic	: Not applicable
Viscosity, dynamic	: No data available
Explosion limits	: Not applicable
Explosive properties	: No data available

# VANADIUM PENTOXIDE

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Oxidizing properties : No data available

### 9.2. Other information

No additional information available

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

### 10.2. Chemical stability

Stable under normal conditions.

### 10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

### 10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

### 10.5. Incompatible materials

No additional information available

### 10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

Acute toxicity (oral) : Toxic if swallowed.

Acute toxicity (dermal) : Not classified

Acute toxicity (inhalation) : Not classified

#### VANADIUM PENTOXIDE (1314-62-1)

LD50 oral rat	221.1 mg/kg Source: ECHA
LD50 dermal rat	> 2500 mg/kg body weight Animal: rat, Animal sex: male, Guideline: OECD Guideline 402 (Acute Dermal Toxicity)
ATE US (oral)	221.1 mg/kg body weight
ATE US (vapors)	4.29 mg/l/4h

#### VANADIUM PENTOXIDE (1314-62-1)

LD50 oral rat	221.1 mg/kg Source: ECHA
LD50 dermal rat	> 2500 mg/kg body weight Animal: rat, Animal sex: male, Guideline: OECD Guideline 402 (Acute Dermal Toxicity)
LC50 Inhalation - Rat (Vapours)	4.29 mg/l Source: ECHA
ATE US (oral)	221.1 mg/kg body weight
ATE US (vapors)	4.29 mg/l/4h

Skin corrosion/irritation : Not classified  
pH: 4

Serious eye damage/irritation : Not classified  
pH: 4

Respiratory or skin sensitization : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Suspected of causing cancer.

#### VANADIUM PENTOXIDE (1314-62-1)

IARC group	2B - Possibly carcinogenic to humans
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# VANADIUM PENTOXIDE

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

VANADIUM PENTOXIDE (1314-62-1)	
IARC group	2B - Possibly carcinogenic to humans

Reproductive toxicity : Not classified  
STOT-single exposure : Not classified  
STOT-repeated exposure : May cause damage to organs through prolonged or repeated exposure.

VANADIUM PENTOXIDE (1314-62-1)	
NOAEL (oral,rat,90 days)	16.9 mg/kg body weight Animal: rat, Animal sex: male

VANADIUM PENTOXIDE (1314-62-1)	
NOAEL (oral,rat,90 days)	16.9 mg/kg body weight Animal: rat, Animal sex: male
STOT-repeated exposure	May cause damage to organs through prolonged or repeated exposure.

Aspiration hazard : Not classified  
Viscosity, kinematic : Not applicable

## SECTION 12: Ecological information

### 12.1. Toxicity

Ecology - general : The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.

VANADIUM PENTOXIDE (1314-62-1)	
LC50 - Fish [1]	0.693 mg/l Source: ECHA

VANADIUM PENTOXIDE (1314-62-1)	
LC50 - Fish [1]	0.693 mg/l Source: ECHA
EC50 72h - Algae [1]	2.907 mg/l Source: ECHA

### 12.2. Persistence and degradability

No additional information available

### 12.3. Bioaccumulative potential

No additional information available

### 12.4. Mobility in soil

No additional information available

### 12.5. Other adverse effects

No additional information available

## SECTION 13: Disposal considerations

### 13.1. Disposal methods

Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.

## SECTION 14: Transport information

In accordance with DOT / TDG / IMDG / IATA

### 14.1. UN number

DOT NA No : UN2862  
UN-No. (TDG) : UN2862  
UN-No. (IMDG) : 2862  
UN-No. (IATA) : 2862

### 14.2. UN proper shipping name

Proper Shipping Name (DOT) : Vanadium pentoxide  
Proper Shipping Name (TDG) : VANADIUM PENTOXIDE

# VANADIUM PENTOXIDE

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Proper Shipping Name (IMDG) : VANADIUM PENTOXIDE  
Proper Shipping Name (IATA) : Vanadium pentoxide

### 14.3. Transport hazard class(es)

#### DOT

Transport hazard class(es) (DOT) : 6.1  
Hazard labels (DOT) : 6.1



#### TDG

Transport hazard class(es) (TDG) : 6.1  
Hazard labels (TDG) : 6.1



#### IMDG

Transport hazard class(es) (IMDG) : 6.1  
Hazard labels (IMDG) : 6.1



#### IATA

Transport hazard class(es) (IATA) : 6.1  
Hazard labels (IATA) : 6.1



### 14.4. Packing group

Packing group (DOT) : III  
Packing group (TDG) : III  
Packing group (IMDG) : III  
Packing group (IATA) : III

### 14.5. Environmental hazards

Other information : No supplementary information available.

### 14.6. Special precautions for user

#### DOT

UN-No.(DOT) : UN2862

# VANADIUM PENTOXIDE

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

DOT Special Provisions (49 CFR 172.102)	: IB8 - Authorized IBCs: Metal (11A, 11B, 11N, 21A, 21B, 21N, 31A, 31B and 31N); Rigid plastics (11H1, 11H2, 21H1, 21H2, 31H1 and 31H2); Composite (11HZ1, 11HZ2, 21HZ1, 21HZ2, 31HZ1 and 31HZ2); Fiberboard (11G); Wooden (11C, 11D and 11F); Flexible (13H1, 13H2, 13H3, 13H4, 13H5, 13L1, 13L2, 13L3, 13L4, 13M1 or 13M2). IP3 - Flexible IBCs must be sift-proof and water-resistant or must be fitted with a sift-proof and water-resistant liner. T1 - 1.5 178.274(d)(2) Normal..... 178.275(d)(2) TP33 - The portable tank instruction assigned for this substance applies for granular and powdered solids and for solids which are filled and discharged at temperatures above their melting point which are cooled and transported as a solid mass. Solid substances transported or offered for transport above their melting point are authorized for transportation in portable tanks conforming to the provisions of portable tank instruction T4 for solid substances of packing group III or T7 for solid substances of packing group II, unless a tank with more stringent requirements for minimum shell thickness, maximum allowable working pressure, pressure-relief devices or bottom outlets are assigned in which case the more stringent tank instruction and special provisions shall apply. Filling limits must be in accordance with portable tank special provision TP3. Solids meeting the definition of an elevated temperature material must be transported in accordance with the applicable requirements of this subchapter.
DOT Packaging Exceptions (49 CFR 173.xxx)	: 153
DOT Packaging Non Bulk (49 CFR 173.xxx)	: 213
DOT Packaging Bulk (49 CFR 173.xxx)	: 240
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27)	: 100 kg
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)	: 200 kg
DOT Vessel Stowage Location	: A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel.
DOT Vessel Stowage Other	: 40 - Stow "clear of living quarters"

### TDG

UN-No. (TDG)	: UN2862
Explosive Limit and Limited Quantity Index	: 5 kg
Excepted quantities (TDG)	: E1
Passenger Carrying Road Vehicle or Passenger Carrying Railway Vehicle Index	: 100 kg
Emergency Response Guide (ERG) Number	: 151

### IMDG

Limited quantities (IMDG)	: 5 kg
Excepted quantities (IMDG)	: E1
Packing instructions (IMDG)	: P002, LP02
IBC packing instructions (IMDG)	: IBC08
IBC special provisions (IMDG)	: B3
Tank instructions (IMDG)	: T1
Tank special provisions (IMDG)	: TP33
EmS-No. (Fire)	: F-A - FIRE SCHEDULE Alfa - GENERAL FIRE SCHEDULE
EmS-No. (Spillage)	: S-A - SPILLAGE SCHEDULE Alfa - TOXIC SUBSTANCES
Stowage category (IMDG)	: A
Properties and observations (IMDG)	: Brownish powder. Slightly soluble in water. Toxic if swallowed, by skin contact or by inhalation.

### IATA

PCA Excepted quantities (IATA)	: E1
PCA Limited quantities (IATA)	: Y645
PCA limited quantity max net quantity (IATA)	: 10kg
PCA packing instructions (IATA)	: 670
PCA max net quantity (IATA)	: 100kg
CAO packing instructions (IATA)	: 677
CAO max net quantity (IATA)	: 200kg
ERG code (IATA)	: 6L



# VANADIUM PENTOXIDE

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

### 14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

## SECTION 15: Regulatory information

### 15.1. US Federal regulations

#### VANADIUM PENTOXIDE (1314-62-1)

Subject to reporting requirements of United States SARA Section 313

CERCLA RQ	1000 lb
RQ (Reportable quantity, section 304 of EPA's List of Lists)	1000 lb
SARA Section 302 Threshold Planning Quantity (TPQ)	10000 lb 100lb if the substance is solid in powder form with particle size less than 100 microns, or is in solution or molten form

Commercial status of components according to the United States Environmental Protection Agency's Toxic Substances Control Act (TSCA):

Name	CAS-No.	Listing	Commercial status	Flags
VANADIUM PENTOXIDE	1314-62-1	Present	Active	

#### VANADIUM PENTOXIDE (1314-62-1)

Subject to reporting requirements of United States SARA Section 313

CERCLA RQ	1000 lb
RQ (Reportable quantity, section 304 of EPA's List of Lists)	1000 lb
SARA Section 302 Threshold Planning Quantity (TPQ)	10000 lb 100lb if the substance is solid in powder form with particle size less than 100 microns, or is in solution or molten form

### 15.2. International regulations

#### CANADA

#### VANADIUM PENTOXIDE (1314-62-1)

Listed on the Canadian DSL (Domestic Substances List)

#### VANADIUM PENTOXIDE (1314-62-1)

Listed on the Canadian DSL (Domestic Substances List)

#### EU-Regulations

No additional information available

#### National regulations

#### VANADIUM PENTOXIDE (1314-62-1)

Listed on IARC (International Agency for Research on Cancer)  
Listed on INSQ (Mexican National Inventory of Chemical Substances)

#### VANADIUM PENTOXIDE (1314-62-1)

Listed on IARC (International Agency for Research on Cancer)  
Listed on INSQ (Mexican National Inventory of Chemical Substances)

# VANADIUM PENTOXIDE

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

### 15.3. US State regulations

VANADIUM PENTOXIDE (1314-62-1)	
U.S. - California - Proposition 65 - Carcinogens List	Yes
U.S. - California - Proposition 65 - Developmental Toxicity	No
U.S. - California - Proposition 65 - Reproductive Toxicity - Female	No
U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No

VANADIUM PENTOXIDE (1314-62-1)					
U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significant risk level (NSRL)	Maximum allowable dose level (MADL)
Yes	No	No	No		

### SECTION 16: Other information

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Full text of H-phrases	
H301	Toxic if swallowed
H351	Suspected of causing cancer
H373	May cause damage to organs through prolonged or repeated exposure

Safety Data Sheet (SDS), USA

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.