

## Chemical Safety Data Sheet MSDS / SDS

## Vanadium(V) oxide

Revision Date:2026-05-31 Revision Number:1

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

## Product identifier

Product name : Vanadium(V) oxide  
CBnumber : CB7265055  
CAS : 1314-62-1  
EINECS Number : 215-239-8  
Synonyms : vanadium pentoxide,VANADIUM(V) OXIDE

## Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses : For R&D use only. Not for medicinal, household or other use.  
Uses advised against : none

## Company Identification

Company : Chemicalbook  
Address : Building 1, Huihuang International, Shangdi 10th Street, Haidian District, Beijing  
Telephone : 010-86108875

## SECTION 2: Hazards identification

## GHS Label elements, including precautionary statements

Symbol(GHS)



Signal word

Danger

## Precautionary statements

P273 Avoid release to the environment.

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

P301+P312 IF SWALLOWED: call a POISON CENTER or doctor/physician IF you feel unwell.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.

Continuerinsing.

P308+P313 IF exposed or concerned: Get medical advice/attention.

## Hazard statements

H318 Causes serious eye damage

H335 May cause respiratory irritation

H341 Suspected of causing genetic defects

H372 Causes damage to organs through prolonged or repeated exposure

H411 Toxic to aquatic life with long lasting effects

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## SECTION 3: Composition/information on ingredients

### Substance

Product name	: Vanadium(V) oxide
Synonyms	: vanadium pentoxide, VANADIUM(V) OXIDE
CAS	: 1314-62-1
EC number	: 215-239-8
MF	: O5V2
MW	: 181.88

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## SECTION 4: First aid measures

### General advice

First aiders need to protect themselves. Show this safety data sheet to the doctor in attendance.

### If inhaled

After inhalation: fresh air. Immediately call in physician. If breathing stops: immediately apply artificial respiration, if necessary also oxygen.

### In case of skin contact

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Consult a physician.

### In case of eye contact

After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.

### If swallowed

If swallowed: give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not available within one hour, induce vomiting (only in persons who are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and consult a doctor as quickly as possible.

### Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11

### Protection of first-aiders

For personal protection see section 8.

### Notes to physician

No data available

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## SECTION 5: Firefighting measures

### Suitable extinguishing media

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

### Unsuitable extinguishing media

For this substance/mixture no limitations of extinguishing agents are given.

### Specific hazards during fire fighting

Not combustible. Ambient fire may liberate hazardous vapours.

### Hazardous combustion products

Vanadium/vanadium oxides

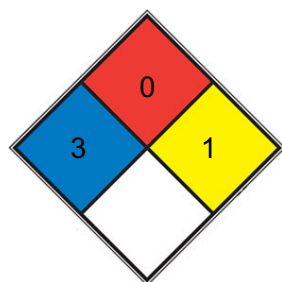
### Specific extinguishing methods

Prevent fire extinguishing water from contaminating surface water or the ground water system.

### Special protective equipment for fire-fighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

### NFPA 704



**HEALTH 3** Short exposure could cause serious temporary or moderate residual injury (e.g. [liquid hydrogen](#), [sulfuric acid](#), [calcium hypochlorite](#), hexafluorosilicic acid)

**FIRE 0** Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand. Materials that will not burn in air when exposed to a temperature of 820 °C (1,500 °F) for a period of 5 minutes.(e.g. Carbon tetrachloride)

**REACT 1** Normally stable, but can become unstable at elevated temperatures and pressures (e.g. [propene](#))

**SPEC.**

**HAZ.**

## SECTION 6: Accidental release measures

### Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Avoid generation and inhalation of dusts in all circumstances. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert. Advice for emergency responders: For personal protection see section 8.

## Environmental precautions

Do not let product enter drains.

## Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully. Dispose of properly. Clean up affected area. Avoid generation of dusts.

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# SECTION 7: Handling and storage

## Handling

### Advice on safe handling

Work under hood. Do not inhale substance/mixture.

## Storage

### Further information on storage conditions

Tightly closed. Dry. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorised persons.

### Storage class

6.1A, Combustible, acute toxic Cat. 1 and 2 / very toxic hazardous materials

### Recommended storage temperature

Recommended storage temperature see product label.

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# SECTION 8: Exposure controls/personal protection

## Ingredients with workplace control parameters

Further information: G2B - Possibly carcinogenic to humans

## Engineering measures

No data available

## Personal protective equipment

### Respiratory protection

required when dusts are generated.

Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

### Recommended Filter type

Filter type P3

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

### Eye/face protection

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

Safety glasses

### Skin and body protection

protective clothing

#### **Hand protection**

##### **Material**

Nitrile rubber

##### **Break through time**

480 min

##### **Glove thickness**

0.11 mm

##### **Protective index**

Full contact

##### **Manufacturer**

KCL 741 L

##### **Material**

Nitrile rubber

##### **Break through time**

480 min

##### **Glove thickness**

0.11 mm

##### **Protective index**

Splash contact

##### **Manufacturer**

KCL 741 L

##### **Remarks**

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D- 36124 Eichenzell, Internet: [www.kcl.de](http://www.kcl.de)).

##### **Hygiene measures**

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

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## SECTION 9: Physical and chemical properties

### **Information on basic physicochemical properties**

solid

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#### **Color**

Orange

#### **Odor**

at 100.00%. odorless

#### **Odor Threshold**

No data available

#### **pH**

4 (50g/l, H<sub>2</sub>O, 20°C)(slurry)

### **pH**

2.7

Method: OECD Test Guideline 105

GLP: yes

### **Melting point/ range**

690 °C

Method: lit.

### **Boiling point/boiling range**

ca. 1,750 °C (decomposition)

### **Flash point**

1750°C

### **Evaporation rate**

No data available

### **Flammability (solid, gas)**

No data available

### **Flammability (liquids)**

No data available

### **Burning rate**

No data available

### **Upper explosion limit / Upper flammability limit**

No data available

### **Lower explosion limit / Lower flammability limit**

No data available

### **Vapor pressure**

8 mm Hg ( 20 °C)

### **Relative vapor density**

No data available

### **Relative density**

3.65 (21.7 °C)

Method: OECD Test Guideline 109

### **Density**

3.35 g/mL (25 °C)

Method: lit.

#### **Water solubility**

515 g/l soluble (20 °C)

#### **Partition coefficient: n-octanol/water**

Not applicable for inorganic substances

#### **Autoignition temperature**

No data available

#### **Decomposition temperature**

No data available

#### **Viscosity, dynamic**

No data available

#### **Viscosity, kinematic**

No data available

#### **Flow time**

No data available

#### **Explosive properties**

Not classified as explosive.

#### **Oxidizing properties**

none

#### **Molecular weight**

181.88 g/mol

#### **Particle characteristics Particle size**

No data available

#### **Solubility in other solvents**

Ethanol: in soluble

#### **Physical state**

turnings

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## SECTION 10: Stability and reactivity

### **Reactivity**

No data available

### **Chemical stability**

The product is chemically stable under standard ambient conditions (room temperature) .

### **Possibility of hazardous reactions**

Exothermic reaction with: Alkali metals halogen-halogen compounds Acids Risk of explosion with: performic acid Risk of ignition or formation of inflammable gases or vapours with: Alkaline earth metals highly flammable solvents oxidisable substances sulfur (in the presence of atmospheric oxygen and/or moisture)

### **Conditions to avoid**

no information available

### **Incompatible materials**

No data available

### **Hazardous decomposition products**

In the event of fire: see section 5

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## **SECTION 11: Toxicological information**

### **11.1 Information on toxicological effects**

#### **Acute toxicity**

Acute toxicity estimate Oral - 220 mg/kg (Acute toxicity estimate according to Regulation (EC) No. 1272/2008)

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Acute toxicity estimate Inhalation - 0.05 mg/l - dust/mist (Acute toxicity estimate according to Regulation (EC) No. 1272/2008)

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

LC50 Dermal - Rat - male and female - > 2,500 mg/kg (OECD Test Guideline 402)

#### **Skin corrosion/irritation**

Skin - in vitro assay

Result: No skin irritation - 15 min

Remarks: (ECHA)

#### **Serious eye damage/eye irritation**

Classified based on available data. For more details, see section 2

#### **Respiratory or skin sensitization**

Maximisation Test - Guinea pig

Result: negative (OECD Test Guideline 406)

#### **Germ cell mutagenicity**

Suspected of causing genetic defects.

Test Type: Micronucleus test

Species: Mouse

Cell type: Red blood cells (erythrocytes)

Application Route: Inhalation

Method: OECD Test Guideline 474

Result: negative

Test Type: Transgenic rodent somatic cell gene mutation assay

Species: Mouse

Application Route: Inhalation

Method: OECD Test Guideline 488

Result: negative

Test Type: comet assay

Species: Mouse

Application Route: Inhalation

Result: negative

Remarks: (ECHA)

#### **Carcinogenicity**

Presumed to have carcinogenic potential for humans

#### **Reproductive toxicity**

Suspected of damaging the unborn child.

Suspected of damaging fertility.

Studies indicating a hazard to babies during the lactation period

#### **Specific target organ toxicity - single exposure**

Inhalation - May cause respiratory irritation. - Respiratory Tract

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

#### **Specific target organ toxicity - repeated exposure**

Inhalation - Causes damage to organs through prolonged or repeated exposure.

- Respiratory Tract

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

#### **Aspiration hazard**

Classified based on available data. For more details, see section 2

### **11.2 Additional Information**

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Vanadium and its compounds generally cause irritations after eye and skin contact and mucosal irritations, coughing, and dyspnoea after inhalation. After absorption of toxic quantities changes in the blood picture, loss of weight, cardiovascular complaints.

Other dangerous properties can not be excluded.

This substance should be handled with particular care.

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## **SECTION 12: Ecological information**

### **Ecotoxicity**

#### **Components:**

#### **vanadium pentoxide:**

#### **Toxicity to fish (Chronic toxicity)**

NOEC (Pimephales promelas (fathead minnow)): 0.24 mg/l Exposure time: 28 d Test Type: Growth inhibition Remarks: (ECOTOX Database)

## Ecotoxicology Assessment

### Chronic aquatic toxicity

Toxic to aquatic life with long lasting effects.

### Persistence and degradability

#### Components:

#### vanadium pentoxide:

#### Biodegradability

Remarks: The methods for determining biodegradability are not applicable to inorganic substances.

### Bioaccumulative potential

#### Components:

#### vanadium pentoxide:

#### Partition coefficient: noctanol/water

Remarks: Not applicable for inorganic substances

### Mobility in soil

No data available

### Other adverse effects

No data available

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## SECTION 13: Disposal considerations

### Disposal methods

#### Waste from residues

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

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## SECTION 14: Transport information

### International Regulations

#### IATA-DGR

UN/ID No. : UN 2862

Proper shipping name : Vanadium pentoxide

Class : 6.1

Packing group : III

Labels : Division 6.1 - Toxic substances

Packing instruction (cargo aircraft) : 677

Packing instruction (passenger aircraft) : 670

### **IMDG-Code**

UN number : UN 2862

Proper shipping name : VANADIUM PENTOXIDE

Class : 6.1

Packing group : III

Labels : 6.1

EmS Code : F-A, S-A

Marine pollutant : yes

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

Not applicable for product as supplied.

### **National Regulations**

#### **JTT 617**

UN number : UN 2862

Proper shipping name : VANADIUM PENTOXIDE

Class : 6.1

Packing group : III

Labels : 6.1

Environmentally hazardous : no

### **Special precautions for user**

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

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## **SECTION 15: Regulatory information**

### **National regulatory information**

#### **Law on the Prevention and Control of Occupational Diseases**

#### **Regulations on Safety Management of Hazardous Chemicals**

#### **Catalogue of Hazardous Chemicals**

Identification of Major Hazard Installations for Hazardous Chemicals (GB 18218)

#### **No. / Code Chemical name / Category Threshold quantity**

#### **J5 Acute toxic 500 t**

#### **Hazardous Chemicals for Priority Management**

Not listed under SAWS

### **Catalogue of Specially Controlled Hazardous**

Not listed Chemicals

### **List of Explosive Precursors**

Not listed

### **Regulations on Labour Protection in Workplaces where Toxic Substances are Used**

### **Catalogue of Highly Toxic Chemicals**

Listed

### **Regulation of Environmental Management on the First Import of Chemicals and the Import and Export of Toxic Chemicals**

### **China Severely Restricted Toxic Chemicals for Import and Export**

Not listed

### **Regulation on the Administration of Precursor Chemicals**

### **Catalogue and Classification of Precursor Chemicals**

Not listed

### **Regulations on the Administration of Controlled Chemicals**

### **List of Controlled Chemicals**

Not listed

### **Regulations of Ozone Depleting Substances Management**

### **List of Controlled Ozone Depleting Substances**

Not listed

### **List of Controlled Ozone Depleting Substances Import and Export**

Not listed

### **Environmental Protection Law**

### **List of Priority Controlled Chemicals**

Not listed

### **List of Key Controlled New Pollutants**

Not listed

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## SECTION 16: Other information

## Full text of other abbreviations

### ACGIH

USA. ACGIH Threshold Limit Values (TLV)

### GBZ 2.1-2007

Occupational exposure limits for hazardous agents in the workplace - Chemical hazardous agents.

### ACGIH / TWA

8-hour, time-weighted average

**GBZ 2.1-2007 / PC-TWA AIC - Australian Invent Transport by Land of Bra bw - Body weight; CMR Standard of the German List (Canada); ECx - Conc associated with x% respo Chemical Substances (Jap response; ERG - Emerge GLP - Good Laboratory P cer; IATA - International Construction and Equipm Half maximal inhibitory c tion; IECSC - Inventory o tional Maritime Dangerou Industrial Safety and H Standardisation; KECl - K tration to 50 % of a test (Median Lethal Dose); MA lution from Ships; MERC of Dangerous Goods; n.o. - No Observed (Adverse) ffect Level; NOELR - No Norm; NTP - National Toxi icals; OECD - Organisatio fice of Chemical Safety a and Toxic substance; PIC stances; (Q)SAR - (Quant (EC) No 1907/2006 of th Registration, Evaluation, Accelerating Decompositi Chemical Substance Inve Thailand Existing Chemical States); UN - United Nat Transport of Dangerous WHMIS - Workplace Hazar**

Permissible concentration - time weighted average ry of Industrial Chemicals

ANNT - National Agency for il

ASTM - American Society for the Testing of Materials

- Carcinogen, Mutagen or Reproductive Toxicant

DIN nstitute for Standardisation

DSL - Domestic Substances ntration associated with x% response

ELx - Loading rate se

EmS - Emergency Schedule

ENCS - Existing and New n)

ErCx - Concentration associated with x% growth rate cy Response Guide

GHS - Globally Harmonised System

actice

IARC - International Agency for Research on Canir Transport Association

IBC - International Code for the nt of Ships carrying Dangerous Chemicals in Bulk

IC50 ncentration

ICAO - International Civil Aviation Organiza- Existing Chemical Substances in China

IMDG - Interna- Goods

IMO - International Maritime Organisation

ISHL alth Law (Japan)

ISO - International Organisation for rea Existing Chemicals Inventory

LC50 - Lethal Concenopulation

LD50 - Lethal Dose to 50% of a test population POL - International Convention for the Prevention of Pol- SUR - The Agreement for the Facilitation of the Transport . - Not Otherwise Specified

Nch - Chilean Norm

NO(A)EC ffect Concentration

NO(A)EL - No Observed (Adverse) Efbserveable Effect Loading Rate

NOM - Official Mexican ology Program

NZIoC - New Zealand Inventory of Chemicals for Economic Co-operation and Development

OPPTS - Office of Pollution Prevention

PBT - Persistent, Bioaccumulative and Toxic - Philippines Inventory of Chemicals and Chemical Substances) Structure Activity Relationship

REACH - Regulation of the European Parliament and of the Council concerning the restriction and restriction of Chemicals

SADT - Self-Heating Temperature

SDS - Safety Data Sheet

TCSI - Taiwan Toxic Chemicals Inventory

TDG - Transportation of Dangerous Goods

TECIS Inventory

TSCA - Toxic Substances Control Act (United States)

UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods

vPvB - Very Persistent and Very Bioaccumulative

Global Harmonized System of Classification and Labelling of Chemicals

**Disclaimer:**

The information in this MSDS is only applicable to the specified product, unless otherwise specified, it is not applicable to the mixture of this product and other substances. This MSDS only provides information on the safety of the product for those who have received the appropriate professional training for the user of the product. Users of this MSDS must make independent judgments on the applicability of this SDS. The authors of this MSDS will not be held responsible for any harm caused by the use of this MSDS.