

## Chemical Safety Data Sheet MSDS / SDS

## Tungsten carbide

Revision Date:2025-07-05 Revision Number:1

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

## Product identifier

Product name : Tungsten carbide  
CBnumber : CB5174366  
CAS : 12070-12-1  
EINECS Number : 235-123-0  
Synonyms : tungsten carbide,Tungsten(IV) carbide

## 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

## Classification of the substance or mixture

Not classified.

## Label elements

## Pictogram(s)

□

Signal word No signal word

## Hazard statement(s)

H228 Flammable solid

## Precautionary statement(s)

P210 Keep away from heat/sparks/open flames/hot surfaces. — No smoking.  
P240 Ground/bond container and receiving equipment.  
P241 Use explosion-proof electrical/ventilating/lighting/.../equipment.  
P280 Wear protective gloves/protective clothing/eye protection/face protection.

## Prevention

none

**Response**

none

**Storage**

none

**Disposal**

none

**Other hazards**

no data available

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## SECTION 3: Composition/information on ingredients

**Substance**

Product name	: Tungsten carbide
Synonyms	: tungsten carbide, Tungsten(IV) carbide
CAS	: 12070-12-1
EC number	: 235-123-0
MF	: CW
MW	: 195.85

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## SECTION 4: First aid measures

**Description of first aid measures****If inhaled**

Fresh air, rest.

**Following skin contact**

Take off contaminated clothing immediately. Wash off with soap and plenty of water. Consult a doctor.

**Following eye contact**

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

**Following ingestion**

Rinse mouth with water. Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a doctor or Poison Control Center immediately.

**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

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## SECTION 5: Firefighting measures

## Extinguishing media

Use dry chemical, carbon dioxide or alcohol-resistant foam.

## Specific Hazards Arising from the Chemical

Not combustible.

## Advice for firefighters

In case of fire in the surroundings, use appropriate extinguishing media.

## NFPA 704



■ HEALTH 1 Exposure would cause irritation with only minor residual injury (e.g. [acetone](#), sodium bromate, potassium chloride)

■ 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 0 Normally stable, even under fire exposure conditions, and is not reactive with water (e.g. helium,[N2](#))

□ SPEC.  
□ HAZ.

## SECTION 6: Accidental release measures

### Personal precautions, protective equipment and emergency procedures

Personal protection: particulate filter respirator adapted to the airborne concentration of the substance. Sweep spilled substance into covered sealable containers. If appropriate, moisten first to prevent dusting. Store and dispose of according to local regulations.

### Environmental precautions

Prevent further spillage or leakage if it is safe to do so. Do not let the chemical enter drains. Discharge into the environment must be avoided.

### Methods and materials for containment and cleaning up

Collect and arrange disposal. Keep the chemical in suitable and closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment. Adhered or collected material should be promptly disposed of, in accordance with appropriate laws and regulations.

## SECTION 7: Handling and storage

### Precautions for safe handling

Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

### Conditions for safe storage, including any incompatibilities

Separated from strong oxidants.

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## SECTION 8: Exposure controls/personal protection

### Control parameters

#### Occupational Exposure limit values

TLV: (respirable fraction): 3 mg/m<sup>3</sup>, as TWA

#### Biological limit values

no data available

### Exposure controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

### Individual protection measures

#### Eye/face protection

Wear safety spectacles in combination with breathing protection.

#### Skin protection

Wear fire/flamm resistant and impervious clothing. Handle with gloves. Gloves must be inspected prior to use. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

#### Respiratory protection

Avoid inhalation of dust and mist. Use local exhaust or breathing protection.

#### Thermal hazards

no data available

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## SECTION 9: Physical and chemical properties

### Information on basic physicochemical properties

Physical state	powder
Colour	Gray
Odour	no data available
Melting point/freezing point	2 785 °C. Atm. press.:1 013 hPa. Remarks:Assumed to be tested under standard conditions.
Boiling point or initial boiling point and boiling range	6 000 °C. Atm. press.:1 013 hPa. Remarks:Pressure not noted, assumed to be tested under standard conditions.
Flammability	no data available
Lower and upper explosion limit/flammability limit	no data available
Flash point	no data available

Auto-ignition temperature	> 140 °C. Atm. press.:1 013 hPa. Remarks:100 mm cube at 140 degrees C.
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	no data available
Solubility	In water: 536 ug/L total dissolved W, @ 24 hours of 7-day definitive (100 mg/L loading) for WC #3. Temperature:21 °C. pH:6.;708 ug/L tungstate anion (WO4--), @ 24 hours of 7-day definitive (100 mg/L loading). Temperature:21 °C. pH:6.;1 037 ug/L total dissolved W, 24-hour scoping test (100 mg/L loading). Temperature:21 °C. pH:8.5.
Partition coefficient n-octanol/water	no data available
Vapour pressure	no data available
Density and/or relative density	15.63
Relative vapour density	15.63
Particle characteristics	no data available

## SECTION 10: Stability and reactivity

### Reactivity

no data available

### Chemical stability

no data available

### Possibility of hazardous reactions

Reacts violently with strong oxidants. This generates fire and explosion hazard.

### Conditions to avoid

no data available

### Incompatible materials

no data available

### Hazardous decomposition products

no data available

## SECTION 11: Toxicological information

### Acute toxicity

- Oral: LD50 - rat (male/female) - > 2 000 mg/kg bw.
- Inhalation: LC50 - rat (male/female) - > 5.3 mg/L air.
- Dermal: LD50 - rat (male/female) - > 2 000 mg/kg bw.

### Skin corrosion/irritation

no data available

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

no data available

### **Respiratory or skin sensitization**

no data available

### **Germ cell mutagenicity**

no data available

### **Carcinogenicity**

no data available

### **Reproductive toxicity**

no data available

### **STOT-single exposure**

May cause mechanical irritation.

### **STOT-repeated exposure**

Repeated or prolonged inhalation of dust particles may cause effects on the lungs. This may result in fibrosis.

### **Aspiration hazard**

Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.

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## **SECTION 12: Ecological information**

### **Toxicity**

Toxicity to fish: LC50 - *Danio rerio* (previous name: *Brachydanio rerio*) - > 1 000 mg/L - 96 h.

Toxicity to daphnia and other aquatic invertebrates: EC50 - *Daphnia magna* - > 1 000 mg/L - 48 h.

Toxicity to algae: EC50 - *Pseudokirchneriella subcapitata* (previous names: *Raphidocelis subcapitata*, *Selenastrum capricornutum*) - 52.9 mg/L - 72 h.

Toxicity to microorganisms: EC50 - activated sludge of a predominantly domestic sewage - > 1 000 mg/L - 3 h.

### **Persistence and degradability**

no data available

### **Bioaccumulative potential**

no data available

### **Mobility in soil**

no data available

### **Toxics Screening Level**

The initial threshold screening level (ITSL) for pure tungsten carbide is 50 µg/m<sup>3</sup> based on an 8 hour averaging time.

### Other adverse effects

no data available

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## SECTION 13: Disposal considerations

### Disposal methods

#### Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

#### Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

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## SECTION 14: Transport information

### UN Number

ADR/RID: Not dangerous goods. (For reference only, please check.)

IMDG: Not dangerous goods. (For reference only, please check.)

IATA: Not dangerous goods. (For reference only, please check.)

### UN Proper Shipping Name

ADR/RID: Not dangerous goods. (For reference only, please check.)

IMDG: Not dangerous goods. (For reference only, please check.)

IATA: Not dangerous goods. (For reference only, please check.)

### Transport hazard class(es)

ADR/RID: Not dangerous goods. (For reference only, please check.)

IMDG: Not dangerous goods. (For reference only, please check.)

IATA: Not dangerous goods. (For reference only, please check.)

### Packing group, if applicable

ADR/RID: Not dangerous goods. (For reference only, please check.)

IMDG: Not dangerous goods. (For reference only, please check.)

IATA: Not dangerous goods. (For reference only, please check.)

### Environmental hazards

ADR/RID: No

IMDG: No

IATA: No

### Special precautions for user

no data available

### Transport in bulk according to IMO instruments

no data available

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## SECTION 15: Regulatory information

### Safety, health and environmental regulations specific for the product in question

#### European Inventory of Existing Commercial Chemical Substances (EINECS)

Listed.

#### EC Inventory

Listed.

#### United States Toxic Substances Control Act (TSCA) Inventory

Listed.

#### China Catalog of Hazardous chemicals 2015

Not Listed.

#### New Zealand Inventory of Chemicals (NZIoC)

Listed.

#### PICCS

Listed.

#### Vietnam National Chemical Inventory

Listed.

#### IECSC

Listed.

#### Korea Existing Chemicals List (KECL)

Listed.

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## SECTION 16: Other information

### Abbreviations and acronyms

CAS: Chemical Abstracts Service

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

RID: Regulation concerning the International Carriage of Dangerous Goods by Rail

IMDG: International Maritime Dangerous Goods

IATA: International Air Transportation Association

TWA: Time Weighted Average

STEL: Short term exposure limit

LC50: Lethal Concentration 50%

LD50: Lethal Dose 50%

EC50: Effective Concentration 50%



## References

IPCS - The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>

HSDB - Hazardous Substances Data Bank, website: <https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>

IARC - International Agency for Research on Cancer, website: <http://www.iarc.fr/>

eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: [http://www.echemportal.org/echemportal/index?pagelD=0&request\\_locale=en](http://www.echemportal.org/echemportal/index?pagelD=0&request_locale=en)

CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>

ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>

ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: <http://www.phmsa.dot.gov/hazmat/library/erg>

Germany GESTIS-database on hazard substance, website: <http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp>

ECHA - European Chemicals Agency, website: <https://echa.europa.eu/>

## Other Information

Alternative CAS number 11130-73-7. Health effects of exposure to the substance have not been investigated adequately. This material is often used in conjunction with other substances such as cobalt compounds. Pneumoconiosis has occurred in exposed persons. The responsible agent is not yet clear.

### 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.