

Tungsten Metal Powder, Carbon Reduced



Safety Data Sheet

Section 1: Identification

1.1 Product Identifier

Product Name: Tungsten Metal Powder, Carbon Reduced
 Product Form: Solid Powder
 Chemical Family: Metal
 CAS Number: 7440-33-7
 Molecular Formula: W
 Molecular Weight: 183.85

1.2 Other Means of Identification

Synonyms: Tungsten, Wolfram, Tungsten Element, W, DLA76955, RTECS Y0717500

1.3 Recommended Uses

Recommended Use: Variety of mechanical and industrial applications

1.4 Manufacturer, Importer, or Responsible Party

Responsible Party: Defense Logistics Agency Strategic Materials
 8725 John J. Kingman Road
 Fort Belvoir, Virginia 22060-6223
 (703) 767-5525

1.5 Emergency Phone Number

Emergency Phone Number: (800) 424-9300 (CHEMTREC)
 (703) 527-3887 (CHEMTREC INTERNATIONAL)

Section 2: Hazard(s) Identification

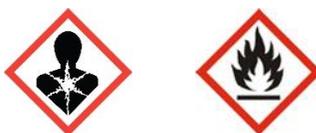
2.1 Classification of Chemical per OSHA CFR 1910.1200

Skin Irritation: Category 2
 Eye Irritation: Category 2A
 Respiratory Sensitization: Category 1B
 Target Organ - Prolonged: Category 2 (Lungs)
 Flammable Solids: Category 2

2.2 Label Elements

Signal Word: DANGER

Symbol(s):



Hazard Statements:	Causes skin irritation. Causes serious eye irritation. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause damage to the lungs through prolonged or repeated exposure. Flammable solid.
Precautionary Statements:	<p><u>Prevention:</u> Wear protective gloves. Wear eye protection/face protection. Wash thoroughly after handling. Do not breathe dust. In case of inadequate ventilation, wear respiratory protection. Keep away from heat, sparks, open flames, and hot surfaces. No smoking. Ground or bond container and receiving equipment. Use explosion-proof electrical, ventilation, and lighting equipment.</p> <p><u>Response:</u> If on skin, wash with plenty of water. If skin irritation occurs, get medical advice/attention. Take off contaminated clothing and wash it before reuse. If in eyes, rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical advice/attention. If inhaled and breathing is difficult, remove person to fresh air and keep comfortable for breathing. If experiencing respiratory symptoms, call a doctor. Get medical advice/treatment if you feel unwell. In case of fire, use dolomite, dry powder, dry sand, graphite, soda ash, or sodium chloride to extinguish.</p> <p><u>Storage:</u> No specific storage requirements.</p> <p><u>Disposal:</u> Dispose of contents/container in accordance with federal, state, and local regulations.</p>

2.3 Other Hazards

Negligible fire and explosion hazard in bulk form. Dust/air mixtures may ignite or explode.

2.4 Unknown Acute Toxicity

Does not apply to this product.

Section 3: Composition / Information on Ingredients

3.1 Chemical Name

Chemical Name: Tungsten Metal Powder, Carbon Reduced
 Composition: 100%

3.2 Common Names/Synonyms

Synonyms: See **Section 1.2** for common names and synonyms.

3.3 CAS Number/Unique Identifiers

CAS Number: 7440-33-7
 EC Number (EINECS): 231-143-9

3.4 Impurities/Stabilizing Additives

No data available.

Section 4: First-Aid Measures

4.1 Description of First-Aid Measures

Inhalation:	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.
Skin Contact:	Wash skin with soap and water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.
Eye Contact:	Flush eyes with plenty of water for at least 15 minutes. Get immediate medical attention.
Ingestion:	If a large amount is swallowed, get medical attention.

4.2 Most Important Symptoms/Effects, Acute and Delayed

Inhalation (Acute):	May cause irritation.
Inhalation (Chronic):	May cause lung damage.
Skin Contact (Acute):	May cause irritation.
Skin Contact (Chronic):	May cause irritation.
Eye Contact (Acute):	May cause irritation.
Eye Contact (Chronic):	May cause irritation.
Ingestion (Acute):	May cause irritation of gastrointestinal tract, nausea, vomiting.
Ingestion (Chronic):	No information on significant adverse effects.

4.3 Indication of Immediate Medical Attention/Special Treatment

Get immediate medical attention if inhaled, exposed to eyes, and/or a large quantity is ingested.

Section 5: Fire-Fighting Measures

5.1 Suitable Extinguishing Media

Dolomite, dry powder for metal fires, dry sand, graphite, soda ash, and sodium chloride.

5.2 Specific Hazards

Negligible fire and explosion hazard in bulk form. Dust/air mixtures may ignite or explode.

5.3 Special Protective Equipment and Precautions

Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. If this is impossible then take the following precautions: Keep unnecessary people away, isolate hazard area, and deny entry. Let the fire burn. Use extinguishing agents appropriate for surrounding fire. Avoid inhalation of material or combustion by-products.

Section 6: Accidental Release Measures

6.1 Personal Precautions, Protective Equipment, and Emergency Procedures

Avoid heat, flames, sparks and other sources of ignition. Do not touch spilled material. Small spills: Collect spilled material in appropriate container for disposal. Move containers away from spill to a safe area. Large spills: Wet down spill with water. Dike for later disposal. Remove sources of ignition. Keep unnecessary people away, isolate hazard area and deny entry. Personal protective equipment is discussed in **Section 8.3**.

6.2 Methods and Materials for Containment and Cleaning Up

Clean up residue with a high-efficiency particulate filter vacuum. Collect spilled material in appropriate container for disposal.

Section 7: Handling and Storage

7.1 Precautions for Safe Handling

Handle in accordance with all current regulations and standards. Use methods to minimize dust. Utilize personal protective equipment to avoid contact with skin. Personal protective equipment is discussed in **Section 8.3**.

7.2 Conditions for Safe Storage

Store in accordance with all current regulations and standards. Keep separated from incompatible substances. Incompatible materials are identified in **Section 10.5**.

Section 8: Exposure Controls / Personal Protection

8.1 Exposure Limits

Tungsten Metal Powder, Carbon Reduced (NSP-33, NSP-34, & 02059)

Tungsten and Insoluble Compounds (as W):

OSHA TWA:	5 mg/m ³ (Vacated by 58 FR 35338, 6/30/1993)
OSHA STEL:	10 mg/m ³ (Vacated by 58 FR 35338, 6/30/1993)
ACGIH TWA:	5 mg/m ³ (8-hours)
ACGIH STEL:	10 mg/m ³
NIOSH Recommended TWA:	5 mg/m ³ (10-hours)
NIOSH Recommended STEL:	10 mg/m ³ (metal and insoluble compounds)
NIOSH Recommended STEL:	3 mg/m ³ (soluble compounds)
UK WEL TWA:	5 mg/m ³
UK WEL STEL:	10 mg/m ³

8.2 Appropriate Engineering Controls

Ventilation: Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits.

8.3 Individual Protection Measures

Eye Protection: Wear splash resistant safety goggles. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Clothing: Wear appropriate chemical resistant clothing.

Gloves: Wear appropriate chemical resistant gloves.

Respirator: The following respirators and maximum use concentrations are drawn from NIOSH and/or OSHA as Tungsten (W).

1. Any air-purifying respirator equipped with an N100, R100, or P100 filter (including N100, R100, and P100 filtering facepieces) except quarter-mask respirators.
2. Any supplied-air respirator.
3. Any self-contained breathing apparatus with a full facepiece.

Unknown Concentrations/IDLH:

1. Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.
2. Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

Escape:

1. Any air-purifying respirator equipped with an N100, R100, or P100 filter (including N100, R100, and P100 filtering facepieces) except quarter mask respirators.
2. Any appropriate escape-type, self-contained breathing apparatus.

Section 9: Physical and Chemical Properties

9.1 Appearance

Physical State:	Solid
Physical Description:	White to gray or black
Physical Form:	Powder

- 9.2 Odor**
Not available.
- 9.3 Odor Threshold**
Not available.
- 9.4 pH**
Not applicable.
- 9.5 Melting / Freezing Points**
Melting Point: 6,134-6,206 °F (3,390-3,430 °C)
Freezing Point: No data available.
- 9.6 Initial Boiling Point and Boiling Range**
Boiling Point 10,220 °F (5,660 °C)
- 9.7 Flash Point**
No data available.
- 9.8 Evaporation Rate**
Not applicable.
- 9.9 Flammability**
No data available.
- 9.10 Upper / Lower Explosive Limits**
No data available.
- 9.11 Vapor Pressure**
Not applicable.
- 9.12 Vapor Density**
Not applicable.
- 9.13 Relative Density**
Water = 1: 19.35
- 9.14 Solubility(ies)**
Insoluble: Water, hydrogen fluoride, potassium hydroxide solutions
Soluble: Nitric acid/hydrofluoric acid mixtures, fused sodium hydroxide/sodium nitrate,
fused potassium hydroxide, sodium carbonate
Very Slightly Soluble: Nitric acid, aqua regia, sulfuric acid
- 9.15 Partition Coefficient**
No data available.
- 9.16 Auto-Ignition Temperature**
No data available.
- 9.17 Decomposition Temperature**
No data available.
- 9.18 Viscosity**
No data available.

Section 10: Stability and Reactivity

10.1 Reactivity

Stable at normal temperatures and pressure. Oxidizes in air and must be protected at elevated temperatures.

10.2 Chemical Stability

Stable at normal temperatures and pressures.

10.3 Possibility of Hazardous Reactions

Tungsten:

Alkali w/Halocarbons:

May explode with heat or on impact.

Alkaline-Earth Metals w/Halocarbons:

May explode with heat or on impact.

Aqua Regia:

Attacked superficially.

Bromine Pentafluoride:

Violent reaction and possible ignition.

Bromine Trifluoride:

Violent reaction.

Chlorine Trifluoride:

Violent reaction.

Fluorine:

Incandescent reaction.

Hydrogen Sulfide:

Incandescent reaction.

Iodine Pentafluoride:

Incandescent reaction when heated.

Lead (IV) Dioxide:

Incandescent reaction when heated.

Nitric Acid:

Attacked superficially.

Nitryl Fluoride:

Incandescent reaction when heated.

Oxidizers (Strong):

Fire and explosion hazard.

Oxygen Difluoride:

Explodes at 752°F (400°C).

Potassium Dichromate:

Combustion attains a temperature of 3,092°F (1,700°C) in 0.1-0.2 seconds.

Sodium Peroxide:

Incandescent reaction when heated.

10.4 Conditions to Avoid

Avoid generating dust. Avoid heat, flames, sparks, and other sources of ignition.

10.5 Incompatible Materials

Incompatibilities:

Acids, halogens, reducing agents, oxidizing materials, bases

Safe storage of the material is discussed in **Section 7.2**.

10.6 Hazardous Decomposition Products

Thermal Decomposition Products:

Miscellaneous Decomposition Products

Section 11: Toxicological Information

11.1 Likely Routes of Exposure

Routes of entry include inhalation, skin contact, eye contact, and ingestion.

11.2 Symptoms

See **Section 4.2** for acute and chronic short and long-term exposure symptoms.

11.3 Short and Long Term Effects

Inhalation (Acute):

May cause irritation and coughing.

Inhalation (Chronic):

Prolonged or repeated exposure has been reported to cause pulmonary fibrosis. Intratracheal injection into the lungs of experimental animals revealed the metallic dust to be inert, with the only pulmonary effect being areas of pigmentation. One conflicting study found the dust to cause interstitial pneumonitis and bronchiolitis in guinea pigs after intratracheal injection of 50 mg a week for 3 weeks. After one year, slight residual lesions in the form of minor atrophic emphysema were present.

Skin Contact (Acute):	Application of 500 mg to the skin of rabbits caused mild irritation. May cause redness.
Skin Contact (Chronic):	May cause dermatitis.
Eye Contact (Acute):	Application of 500 mg to the eyes of rabbits caused mild irritation. May cause redness and conjunctivitis.
Eye Contact (Chronic):	May cause conjunctivitis.
Ingestion (Acute):	May cause nausea, vomiting, and irritation of the gastrointestinal tract.
Ingestion (Chronic):	When rats were fed 2%, 5% or 10% powdered tungsten in their diets, the females gained 15.4% less weight than the control females; there was no difference between tungsten-fed and control males. The sex specific effect was suggested to depend on metabolic utilization of foodstuffs. Reproductive effects have been reported in animals.

11.4 Numerical Measures of Toxicity

Tungsten Metal Powder, Carbon Reduced (NSP-33, NSP-34 & 02059)

Irritation Data:	500 mg/24 hour(s) skin-rabbit mild 500 mg/24 hour(s) eyes-rabbit mild
Toxicity Data:	5 gm/kg intraperitoneal-rat LD ₅₀
Acute Toxicity Level:	Insufficient data.
Reproductive Effects Data:	1,210 µg/kg oral-rat TDL ₀ 35 week(s) pre pregnancy continuous 1,160 µg/kg oral-rat TDL ₀ 30 week(s) pre pregnancy/1-20 day(s) pregnant female continuous

11.5 Carcinogen Status

OSHA:	No
NTP:	No
IARC:	No

Section 12: Ecological Information

12.1 Ecotoxicity

No data available.

12.2 Persistence and Degradability

No data available.

12.3 Bioaccumulative Potential

No data available.

12.4 Mobility in Soil

Tungsten compounds will exist as ions or insoluble solids in the environment and therefore volatilization from moist soil surfaces will not be an important fate process. Tungsten compounds will not volatilize from dry soil surfaces based upon their ionic character and low vapor pressures. If released into water, tungsten compounds will adsorb to suspended solids and sediment based upon their range or sorption coefficients. Tungsten in natural waters is in the form of tungstate (i.e., WO₄²⁻) and other tungsten polyanions. Tungsten compounds will exist as ions or insoluble solids in the environment and therefore volatilization from water surfaces will not be an important fate process.

12.5 Other Adverse Effects

If released into water, tungsten compounds will adsorb to suspended solids and sediment based upon their range or sorption coefficients. Tungsten in natural waters is in the form of tungstate (i.e., WO₄²⁻) and other tungsten polyanions. Tungsten compounds will exist as ions or insoluble solids in the environment and therefore volatilization from water surfaces will not be an important fate process.

Section 13: Disposal Considerations

Dispose of in accordance with all applicable regulations. Tungsten Metal Powder, Carbon Reduced is subject to disposal regulations under USEPA 40 CFR Part 262, Hazardous Waste Number: D001 (Ignitable Waste).

Section 14: Transport Information

14.1 UN Number

UN 3089

14.2 UN Proper Shipping Name

Metal powders, flammable, n.o.s.

14.3 Transport Hazard Class(es)

U.S. Department Of Transportation:	Class 4.1
CA Transportation/Dangerous Goods:	Class 4.1
Land Transport ADR:	Class 4.1, Classification Code F3
Land Transport RID:	Class 4.1, Classification Code F3
Air Transport IATA:	Class 4.1
Air Transport ICAO:	Class 4.1
Maritime Transport IMDG:	Class 4.1

14.4 Packing Group

Packing Group: III

14.5 Environmental Hazards

No data available.

14.6 Transport in Bulk

No data available.

14.7 Special Precautions

No data available.

Section 15: Regulatory Information

US Regulations

CERCLA 102A/103 (40 CFR 302.4): Not regulated.

SARA Title III

Section 302 (40 CFR 355 Subpart B): Not regulated.

Section 304 (40 CFR 355 Subpart C): Not regulated.

Sections 311/312 (40 CFR 370.21): Yes (Fire)

Section 313 (40 CFR 372.65): Not regulated.

OSHA Process Safety: Not regulated.

State Regulations

California Proposition 65: Not regulated.

National Inventory Status

U.S. Inventory (TSCA): Listed on inventory.

TSCA 12(B) Export Notification: Not listed.

Section 16: Other Information

The information in this Safety Data Sheet meets the requirements of the United States Department of Labor OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION and regulations promulgated thereunder (29 CFR 1910.1200 et. seq.). This document is intended only as a guide to the appropriate precautionary material handling by a person trained in, or supervised by a person trained in, chemical handling. Exposure to this chemical may have serious adverse health effects. This chemical may interact with other substances. Since the potential uses are so varied, all of the potential hazards of use or interaction with other chemicals or materials cannot be identified on this Safety Data Sheet. The user should recognize that this chemical can cause injury, especially if improperly handled, precautionary measures are not followed, and personal protective equipment not worn. Read and understand all precautionary information prior to use. The Defense Logistics Agency (DLA) shall not be held liable for any damage resulting from handling or from contact with the above chemical.

References:

Chemadvisor, Inc. *Material Safety Data Sheet. Product Name: Tungsten Metal Powder, Carbon Reduced.* Revised December 11, 2008. (as provided by the Defense Logistics Agency)

American Conference of Governmental Industrial Hygienists. *2013 TLVs® and BEIs®, ACGIH® Publication #0113.* 2013.

US Department of Transportation. *Emergency Response Guidebook.* 2012

Centers for Disease Control and Prevention. *NIOSH Pocket Guide to Chemical Hazards,* <http://www.cdc.gov/niosh/npg/>.

National Institute of Health, Toxicology Data Network. <http://toxnet.nlm.nih.gov/>

NOTE: No data available: no data for this topic found using references listed.

Date of Preparation of Updated SDS: November 19, 2015