Safety Data Sheet (SDS)

GHS Rev. 03

SECTION 1 – CHEMICAL IDENTIFICATION

1.1 Product Names: Tungsten Products
Other Identifiers: "Tungsten metal", "W", "Tungsten metal parts"

1.2 Product Use: Specialty metal; may be in powder, wire, filament or fabricated metal parts.

1.3 Supplier: Elmet Technologies, LLC
1560 Lisbon Street
Lewiston, Maine 04240
(207) 333-6210

1.4 Emergency Telephone # 207-333-6100

SECTION 2 – HAZARDS IDENTIFICATION

2.1 General Hazard Statement

Solid metallic products are generally classified as "articles" and do not constitute a hazardous materials in solid form under the definitions of the OSHA Hazard Communication Standard (29 CFR 1910.1200). Any articles manufactured from these solid products would be generally classified as non-hazardous. However some hazardous elements contained in these products can be emitted under certain processing conditions such as but not limited to: burning, melting, cutting, sawing, brazing, grinding, machining, milling, and welding. Products in the solid state present no fire or explosion hazard. Small chips, fines, and dust may ignite readily, though.

Note: Since combustibility and explosivity of metal fines is dependent on particle size and moisture content which would be dependent on the user's process conditions, it is difficult to state definitely whether the metal fines will be combustible or explosive. The following classification information is for the potentially hazardous elements which may be released during processing.

2.2 GHS Classification

Not classified as hazardous.

2.3 GHS Signal Word

N/A

2.4 GHS Hazard Statements

H320 – Causes eye irritation (in powder form).

2.5 GHS Precautionary Prevention Statements

P264 – Wash hands thoroughly after handling.
P260 – Do not breathe dust/fumes.

2.6 GHS Precautionary Response Statements

P305 – **IF IN EYES**:
Rinse cautiously with water for several minutes. Remove contact lenses if easy to do so. Continue rinsing. Get medical advice if eye irritation persists.

2.7 GHS Precautionary Storage Statements
N/A

2.8 GHS Precautionary Disposal Statements
P501 – Dispose of contents/containers in accordance with local, state and federal regulation.

SECTION 3 – CHEMICAL COMPOSITION/INGREDIENTS

3.1 Chemical Composition:

Tungsten	CAS No. 7440-33-7	99.9-100%
Lanthanum Oxide	CAS No. 1312-81-8	<0.1%

SECTION 4 – FIRST AID MEASURES

4.1 Inhalation:
If excessive dust is inhaled, remove exposed person from source to fresh air. If irritation or discomfort persists seek medical attention.
Ingestion:
Immediately give a glass of water. First aid is not generally required. If in doubt, contact a poison information center or a physician.
Skin contact:
Brush material off skin. If excessive skin or hair contact occurs, wash affected area with soap and water. Seek medical attention in event of irritation.
Eye contact:
Immediately flush eyes with water for at least 15 minutes. Remove contact lenses if easy to do so. Occasionally lift the upper and lower eyelids to ensure complete irrigation. If pain persists seek medical attention.

Note: Long term exposure to high dust concentrations may cause changes in lung function (i.e. (pneumoconiosis) caused by particles less than 0.5 micron penetrating and remaining in the lung.

SECTION 5 – FIRE FIGHTING MEASURES

5.1 Suitable Extinguishing Media:
Cover burning material with an inert powder such as dry sand or limestone. Fine dust generated during grinding operations may ignite if allowed to accumulate and subjected to an ignition source.

5.2 Firefighting Procedures:
In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode. Cool fire exposed containers with water from a safe distance. Remove containers from path of fire if easy to do so.

5.3 Unusual Fire/Explosion Hazards:
Metal powders may burn when metal is finely divided. Powders may be ignited by heat, sparks, friction or flame. Metal powders will burn with intense heat. Do not disturb burning dust as a

potential explosion may result under certain conditions. Containers may explode on heating. Gases generated in fire may be irritating, corrosive or poisonous.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions:
Minor releases: Wear personal protective equipment as specified in Section 8. Avoid generating and breathing dust. Avoid contact with skin and eyes. Eliminate all sources of ignition. Vacuum with intrinsically-safe equipment or sweep up.
Major releases: Clear personnel from area. Responders should wear air supplied breathing apparatus and protective gloves. Use dry cleanup methods and avoid generating dust. Recover uncontaminated product in clean, dry, labeled containers.

6.2 Environmental Precautions:
No special environmental precautions.

SECTION 7 – HANDLING AND STORAGE

7.1 Precautions for Safe Handling:
Avoid generating and breathing dust. Provide adequate ventilation if dust is created. Avoid breathing dust or fumes. Avoid sources of heat and ignition sources around metal dust. Ground and bond all metal containers used in shipping, producing, or transferring operations to prevent static sparks that could ignite a dust cloud of finely divided tungsten particles. Wash thoroughly before eating or using tobacco products. See Section 8 for personal protective equipment information.

7.2 Conditions for Safe Storage:
Store in a cool, dry, ventilated area. Store materials away from heat or ignition sources. Separate from strong oxidizing agents, nitrates, nitrites, bromine trifluoride, chlorine trifluoride, lead dioxide, fluorine, oxygen difluoride, nitryl fluoride, hydrogen sulfide gas, peroxides, and lead oxide.

SECTION 8 – EXPOSURE CONTROLS AND PERSONAL PROTECTION

8.1 Exposure Limits:

CHEMICAL & CAS NO.	NIOSH RELs	ACGIH TLVs
Tungsten (7440-33-7) As Metal and Insoluble Compounds	5 mg/m^3 TWA 10 mg/m^3 STEL/CEIL(C)	5 mg/m^3 TWA 10 mg/m^3 STEL/CEIL(C)
Tungsten (7440-33-7) As Soluble Compounds	1 mg/m^3 TWA 3 mg/m^3 STEL/CEIL(C	1 mg/m^3 TWA 3 mg/m^3 STEL/CEIL(C)

8.2 Engineering Controls:
Fine metal dusts must be collected at the source of generation as they are potentially explosive. Tungsten metal powder is potentially a reactive finely divided metal. A system of local and/or general exhaust is recommended to keep employee exposures below airborne exposure limits. Bag or filter-type collectors should be mounted away from work areas and designed with explosion relief doors.

8.3 Personal Protective Equipment:

Respiratory Protection:
If the exposure limit is exceeded and engineering controls are not feasible, a NIOSH-approved respirator designed to properly protect employees from known airborne contaminant concentrations shall be used. For emergencies or instances where the exposure levels are not known, a full face-piece positive-pressure air supplied respirator shall be used.
WARNING: Air purifying respirators do not protect workers in oxygen-deficient atmospheres.

Eye Protection:
Safety glasses with side shields or goggles as required.

Skin Protection:
Chemical-resistant gloves and clothing are recommended to minimize skin contact.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Silver grey to black
Odor: Odorless
pH: N/A
Melting point/freezing point: 6,170 °F (3,410 °C)
Boiling point: 10,220 °F (5,660 °C)
Flash point: N/A
Evaporation rate: N/A
Flammability: N/A
LEL (%): N/A
UEL (%): N/A
Vapor pressure (mmHg)): 1 at 21 °C
Vapor density: Not volatile
Specific gravity (water = 1): 19.3
Solubility in water: Not water soluble
Auto-ignition temperature: Unknown

SECTION 10 – STABILITY AND REACTIVITY

10.1 Stability:
Stable under normal conditions of use and storage however powder or dust in fine size may ignite during intensive mechanical treatment or excessive heat.

10.2 Possibility of Hazardous Reactions and Conditions to Avoid
Heat, incompatibles, sources of ignition.

10.3 Incompatibility (materials to avoid):
Strong oxidizers. Separate from strong oxidizing agents, nitrates and nitrites.

10.4 Hazardous Decomposition Products:
Will form trioxide when heated in air and sublime at extremely high temperatures above 800 °C.

10.5 Hazardous Polymerization:
Will not occur.

SECTION 11 – TOXICOLOGICAL INFORMATION

11.1 Emergency Overview:
Product in powder form may cause eye irritation.

11.2 Potential Health Effects:
Inhalation: Persons with impaired respiratory function may incur further disability if excessive concentrations of particulate are inhaled.
Ingestion: Not thought to produce harmful effects. Ingestion of insignificant quantities not thought to be cause of concern.
Eye Contact: Direct contact with the eye may cause discomfort (tearing, redness) and abrasive eye inflammation.
Skin Contact: Not thought to produce adverse health effects or skin irritation.
Aggravation of Pre-existing Conditions: Persons with pre-existing eye disorders or impaired respiratory functions may be more susceptible to the effects of this material.

11.3 Acute Toxicity Values:
Unknown.

11.4 NTP Carcinogenicity:

Ingredient	Known	Anticipated	IARC Category
Tungsten (7440-33-7)	No	No	None

SECTION 12 – ECOLOGICAL INFORMATION

12.1 Environmental Fate:
No data available.

12.2 Environmental Toxicity:
No data available.

12.3 Persistence and Degradability:
No data available.

12.4 Mobility in Soil:
No data available.

SECTION 13 – DISPOSAL CONSIDERATIONS

13.1 Collect contaminated waste, place in sealed containers, and dispose in accordance with local, state and federal regulations.

SECTION 14 – TRANSPORT INFORMATION

14.1 U.S. Department of Transportation (DOT)
Not regulated for transport by DOT.

SECTION 15 – REGULATORY INFORMATION

15.1 US Federal Regulations

RCRA: This product does not contain ingredients that could enable it to become a hazardous waste as defined by 40 CFR 260.10 if the product is discarded.
Clean Air Act: This product does not contain ingredients identified as Hazardous Air Pollutants in CAA Section 112(b).
Safe Drinking Water Act: This product does not contain ingredients for which there are secondary Maximum Concentration Limits established.
Clean Water Act: This product does not contain compounds identified in 40 CFR 116.4
EPCRA, SARA Title III, Section 313: Chemical not subject to reporting requirements.
CERCLA: Reporting for releases of this product to the environment is not required.
DOT: See section 14.
TSCA: This product is listed on the US Toxic Substances Control Act (TSCA) Inventory.

SECTION 16 – OTHER INFORMATION

16.1 National Fire Protection Association (NFPA) Ratings:

This information is intended solely for the use of individuals trained in the NFPA system.
Health: 1
Flammability: 0
Reactivity: 0
Revision Indicator: New SDS
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