MATERIAL SAFETY DATA SHEET
OSHA HAZARD COMMUNICATION RULE

DATE OF LAST REVISION: 02-18-99

CHEMICAL IDENTITY

LABEL IDENTITY
CHEMICAL NAME/SYNONYMS TUNGSTEN METAL
FORMULA W
CHEMICAL FAMILY METAL
HAZARDOUS INGREDIENTS TUNGSTEN

%: 100 CAS: 7440-33-7 TLV: 5 mg/m3 OSHA/PEL: 5mg/m3

PHYSICAL AND CHEMICAL PROPERTIES

COLOR, FORM AND ODOR Silver-grey to black in color. Odorless.
BOILING POINT 5927
DENSITY (gm/cc) 19.3
VAPOR PRESSURE @ 20°C 1@21 C
% VOLATILE BY VOLUME (%) 0
REACTION WITH WATER None
EVAPORATION RATE (H20=1) NA
SOLUBILITY IN WATER Insoluble
MELTING POINT 3410

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT NA
AUTOIGNITION TEMPERATURE (°C) ND
FLAMMABILITY Weak fire hazard. Dust is flammable.
EXTINGUISHING MEDIA Dry chemical. Cover burning material with an inert substance, such as dry sand, salt, or limestone to exclude oxygen.

SPECIAL FIRE FIGHTING PROCEDURES Wear NIOSH/MSHA approved self-contained breathing apparatus and full protective clothing.

UNUSUAL FIRE & EXPLOSION HAZARDS Weak fire and explosion hazard depending on particulate size and dispersion in air. Dust is flammable when exposed to flame.

GENERAL HAZARDS:
Tungsten powder may present a fire or explosion hazard under favoring conditions of particle size, dispersion, and strong ignition source.
TUNGSTEN
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HEALTH HAZARD INFORMATION

TOXICITY DATA: Most studies have shown Tungsten to be toxicologically inert. Dust inhalation may cause irritation of the nose and throat. Skin and eye contact may cause irritation due to abrasive action of the dust. Mildly toxic by an unspecified route. Experimental teratogen and reproductive effects.

ROUTES OF ENTRY

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<th>INHALATION</th>
<th>SKIN</th>
<th>INGESTION</th>
<th>EYES</th>
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<td>Yes</td>
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MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: Chronic: Possible pulmonary fibrosis.

EFFECTS OF OVEREXPOSURE (acute and chronic):

INHALATION: Two Russian studies found signs of pulmonary fibrosis in some workers exposed to Tungsten Trioxide and Tungsten Carbide.

DERMAL/EYE: Dust may cause irritation to eyes. Abrasive action of the dust may cause skin irritation.

INGESTION: No adverse affects are likely.

CARCINOGENICITY: No  NTP: No  IARC MONOGRAPHS: No  OSHA REGULATE: No

EMERGENCY FIRST AID PROCEDURES:

INGESTION: If a substantial quantity of Tungsten is swallowed, give person (if conscious) a large quantity of water to drink, induce vomiting, and seek medical attention.

INHALATION: Remove victim to fresh air. Administer oxygen. Seek medical attention.

SKIN CONTACT: Brush material off skin. Wash affected area with soap and water. Prevent further contact with the dust. If irritation persists, seek medical attention.

EYE CONTACT: If irritation occurs, flush eye(s) with copious amounts of water for 15 minutes. Seek medical attention.

REACTIVITY DATA

STABILITY: Stable

INCOMPATIBILITY (MATERIALS TO AVOID): Strong acids, Halogens, fluorine gas at room temperature

HAZARDOUS DECOMPOSITION PRODUCTS: Will form trioxide when heated.

HAZARDOUS POLYMERIZATION: Will Not Occur

CONDITIONS TO AVOID: Exposure to air
SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
Wearing full protective clothing, isolate the area and insure proper ventilation. Vacuum up spill and place in a container for proper disposal.

WASTE DISPOSAL METHOD:
In accordance with regulations.

SPECIAL PROTECTIVE INFORMATION

RESPIRATORY PROTECTION
NIOSH/MSHA approved respirator
LOCAL EXHAUST
Recommended when dust levels are excessive.
MECHANICAL (general)
Recommended
SPECIAL
None
OTHER
Rubber gloves
PROTECTIVE GLOVES
Safety glasses with side shields
EYE PROTECTION
Maintain sink, safety shower and eyewash fountain in the work area. Wear full protective clothing at all times.
OTHER PROTECTIVE EQUIPMENT

SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING/STORAGE:
Store in tightly closed containers in a cool, dry place. Wash hands and face thoroughly. Avoid breathing dust.

TRANSPORTATION REQUIREMENTS
DOT CLASS: Not Classified
UN NUMBER: NC
IMCO CLASS: NC
OTHER: ---

PRECAUTIONARY LABELING
NONE

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NA = NOT APPLICABLE
ND = NO DATA FOUND