

## **MATERIAL SAFETY DATA SHEET**

MICRO SURFACE CORPORATION

### **1. PRODUCT IDENTIFICATION:**

PRODUCT NAME: TUNGSTEN DISULFIDE

PRODUCT CODE: N/A

CHEMICAL NAME: TUNGSTEN DISULFIDE

CHEMICAL FAMILY: REFRACTORY METAL SULFIDE

SYNONYMS: WS2

CAS NUMBER: 12138-09-9

FORMULA: WS2

MOLECULAR WEIGHT: 248.02

### **2. IDENTITY INFORMATION:**

CHEMICAL FORMULA: WS2

INGREDIENT: WS2

PERCENT: >99%

### **3. HAZARDOUS INGREDIENTS:**

PRIMARY ROUTES OF ENTRY: INHALATION, INGESTION, SKIN OR EYE CONTACT (FOR DUSTS, MISTS, POWDER, AND FUMES)

EFFECTS OF OVEREXPOSURE: TUNGSTEN DISULFIDE DOES NOT CONSTITUTE AN IMPORTANT HEALTH HAZARD, EXPOSURE IS RELATED CHIEFLY TO THE DUST ARISING OUT OF THE CRUSHING AND MILLING OPERATIONS. CHRONIC INHALATION OF THE DUST MAY CAUSE LUNG DAMAGE IN HUMANS.

CARCINOGENIC ASSESSMENT: NOT LISTED

### **4. PHYSICAL AND CHEMICAL PROPERTIES:**

PHYSICAL FORM: POWDER

COLOR: GRAYISH-BLACK

ODOR: NONE – SLIGHT

BOILING POINT: N/A

MELTING POINT: DECOMPOSES SLOWLY IN AIR AT 800F. >3350F IN INERT ATMOSPHERE

VAPOR PRESSURE: N/A

VAPOR DENSITY: N/A

EVAPORATION RATE: N/A

SOLUBILITY IN WATER: NONE

SPECIFIC GRAVITY: 0.75G/CM<sup>3</sup>

PERCENT VOLATILES BY VOLUME: N/A

#### **5. FIRE AND EXPLOSION DATA:**

FLASH POINT: N/A

EXTINGUISHING MEDIA: CLASS D FIRE EXTINGUISHING AGENTS, DRY POWDER, OR OTHER AGENT SUITABLE FOR THE SURROUNDING FIRE.

SPECIAL PROCEDURES: FOR A POWDER FIRE CONFINED TO A SMALL AREA – USE A RESPIRATOR APPROVED FOR TOXIC DUST AND MITES. FOR A LARGE FIRE – USE SELF CONTAINED BREATHING APPARATUS

UNUSUAL HAZARDS: DUSTS MAY PRESENT A FIRE OR EXPLOSION HAZARD UNDER FIRE FAVORING CONDITIONS OF PARTICLE SIZE, DISPERSION, AND STRONG IGNITION SOURCE. HOWEVER, THIS IS NOT EXPECTED TO BE A PROBLEM UNDER NORMAL HANDLING CONDITIONS.

#### **6. HUMAN HEALTH DATA:**

ROUTE OF ENTRY – INHALATION: YES

ROUTE OF ENTRY – SKIN: NO

ROUTE OF ENTRY – INGESTION: YES

HEALTH HAZARD ACUTE AND CHRONIC: ACUTE: INHALATION OF TUNGSTEN DISULFIDE MAY OR MAY NOT CAUSE TRANSIENT OR PERMANENT LUNG DAMAGE. INHALATION MAY CAUSE IRRITATION OF THE NOSE AND THROAT. MOST STUDIES HAVE SHOWN INSOLUBLE TUNGSTEN COMPOUNDS TO BE TOXICOLOGICALLY INERT. TUNGSTEN DISULFIDE MAY CAUSE SKIN AND EYE IRRITATION TYPICALLY DUE TO THE ABRASIVE NATURE OF THE POWDER. HOWEVER, THESE EFFECTS ARE GENERALLY ONLY FOUND WHEN THERE IS CONCURRENT EXPOSURE TO OTHER DUST (S).

#### **7. EMERGENCY AND FIRST AID PROCEDURES:**

FIRST AID FOR EYES: IF IRRITATION OCCURS, FLUSH WITH A LARGE AMOUNT OF WATER FOR AT LEAST 15 MINUTES. IF IRRITATION PERSISTS, SEEK MEDICAL ATTENTION.

FIRST AID FOR SKIN: WASH WITH SOAP AND WATER. IF IRRITATION OR RASH OCCURS, ISOLATE FROM EXPOSURE. IF RASH PERSISTS, SEEK MEDICAL ATTENTION.

FIRST AID FOR INHALATION: IF LARGE AMOUNTS OF DUST ARE INHALED, MOVE THE EXPOSED PERSON TO FRESH AIR. IF NECESSARY, PERFORM ARTIFICIAL RESPIRATION AND SEEK MEDICAL ATTENTION.

FIRST AID FOR INGESTION: IF INGESTED, GET MEDICAL ATTENTION. GIVE LARGE QUANTITIES OF WATER AND INDUCE VOMITING. DO NOT MAKE UNCONSCIOUS PERSON VOMIT.

#### **8. PRECAUTIONS FOR SAFE HANDLING AND USE:**

STEPS: IF MATERIAL RELEASED/SPILLED: AVOID DUST GENERATION. DO NOT CAUSE MATERIAL TO BECOME AIRBORNE. PROVIDE ADEQUATE VENTILATION. IF TLV IS EXCEEDED, CLEAN-UP PERSONNEL NEED NIOSH/MSHA APPROVED DUST RESPIRATOR. VACUUM (W/APPROPRIATE FILTER TO PREVENT AIRBORNE DUST LEVEL WHICH EXCEEDS TLV) OR WET DUST MOP OR OTHER WET CLEAN-UP METHOD.

NEUTRALIZING AGENT: NONE SPECIFIED BY MANUFACTURER

WASTE DISPOSAL METHOD: DISPOSAL MUST BE IN ACCORDANCE WITH APPROPRIATE LOCAL, STATE, AND FEDERAL REGULATIONS.

PRECAUTIONS – HANDLING/STORING: MAINTAIN GOOD HOUSEKEEPING PROCEDURES TO PREVENT DUST ACCUMULATION. WASH EXPOSED SKIN AT END OF WORK SHIFT. DO NOT SHAKE CLOTHING, RAGS, OR OTHER ITEMS TO REMOVE DUST.

OTHER PRECAUTIONS: DUST SHOULD BE REMOVED BY WASHING/VACUUMING (WITH APPROPRIATE FILTERS) THE CLOTHING, RAGS, OR OTHER ITEMS. PERIODIC MEDICAL EXAMINATIONS ARE REQUIRED FOR INDIVIDUALS REGULARLY EXPOSED TO DUST. NOTE: REPORTED IN EPA TSCA INVENTORY, 1980.

#### **9. CONTROL MEASURES:**

RESPIRATORY PROTECTION: NIOSH/MSHA APPROVED DUST RESPIRATOR IS REQUIRED IF TLV IS EXCEEDED. ALL APPROPRIATE REQUIREMENTS SET FORTH IN 29 CFR 1910.134

SHOULD BE MET.

VENTILATION: GENERAL AND LOCAL VENTILATION IS RECOMMENDED. USE LOCAL EXHAUST VENTILATION, WHICH IS ADEQUATE TO LIMIT PERSONAL EXPOSURE TO LEVELS, WHICH DO NOT EXCEED THE TLV. IF SUCH EQUIPMENT IS NOT AVAILABLE USE RESPIRATORS AS SPECIFIED ABOVE.

PROTECTIVE GLOVES: IMPERVIOUS GLOVES ARE RECOMMENDED WHEN CONTACT IS LIKELY

EYE PROTECTION: SAFETY GOGGLES OR GLASSES RECOMMENDED

OTHER PROTECTIVE EQUIPMENT: NONE UNDER NORMAL CONDITIONS

WORK HYGIENIC PRACTICES: WASH HANDS THOROUGHLY AFTER HANDLING, BEFORE EATING OR SMOKING.

SUPPLEMENTAL SAFETY AND HEALTH DATA: EXPLOSIVE HAZARD: DEPENDING UPON PARTICLE SIZE, DISPERSION, AND EXPOSURE TO IGNITION SOURCE. THIS IS NOT EXPECTED UNDER NORMAL CONDITIONS. AMMONIUM METATUNGSTATE, PARTICULARLY POWDER < 1 MICRON (FSSS) CAN BE IGNITED IN AIR BY FRICTION DURING BLENDING, MILLING, ETC., IF OVER BLENDED, OVER MILLED, ETC. FINE POWDERS MAY IGNITE SPONTANEOUSLY IN AIR.

#### **10. TOXICOLOGICAL INFORMATION :**

TUNGSTEN DISULFIDE ITSELF DOES NOT CONSTITUTE AN IMPORTANT HEALTH HAZARD; EXPOSURE IS RELATED CHIEFLY TO ANY DUST CREATED. HEAVY EXPOSURE TO THE DUST OR THE INGESTION OF LARGE AMOUNTS OF THE SOLUBLE COMPOUNDS PRODUCES CHANGES IN BODY WEIGHT, BEHAVIOR, BLOOD CELLS, COLIN ACTIVITY, AND SPERM N EXPERIMENTAL ANIMALS.

#### **11. ECOLOGICAL INFORMATION:**

NOT AVAILABLE AT THIS TIME

#### **12. DISPOSAL CONSIDERATIONS:**

THIS MATERIAL MUST BE DISPOSED OF IN ACCORDANCE WITH ANY AND ALL APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS. MATERIAL INTENDED FOR DISPOSAL MAY BE SOLD AS SCRAP FOR RECLAIM.

**13. TRANSPORT INFORMATION:**

THIS MATERIAL MUST BE STOCKED IN DRY, VENTILATED PLACE WITHOUT ACID, ALKALI  
AVOID GETTING WET IN THE RAIN DURING TRANSPORT PERIOD.

**14. REGULATORY INFORMATION:**

NOT AVAILABLE AT THIS TIME.

**15. REACTIVITY DATA:**

STABILITY: STABLE

CONDITIONS TO AVOID: N/A

INCOMPATIBILITY (MATERIALS TO AVOID): CONTACT WITH STRONG ACIDS MAY  
GENERATE HYDROGEN SULFIDE

HAZARDOUS DECOMPOSITION PRODUCTS: OXIDES OF SULFUR AND TUNGSTEN MAY BE  
EVOLVED AT EXTREME TEMPERATURES

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

CONDITIONS TO AVOID: N/A