

Material Safety Data Sheet  
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SECTION 1 - PRODUCT IDENTIFICATION AND USE

PRODUCT IDENTIFIER: ZIRCONIATED TUNGSTEN  
CATALOG NUMBERS: 96-113X, 8096-123X, 8096-127X  
PRODUCT USE: TIG Welding Electrode  
MANUFACTURERS NAME: OSRAM SYLVANIA, Inc. EMERGENCY PHONE #: (717)265-2121  
STREET ADDRESS: Chemical and Metallurgical Division  
CITY: Tonawanda STATE: Pennsylvania ZIP CODE: 18848  
DISTRIBUTORS NAME: TWECO Products, Inc. EMERGENCY PHONE #: (316)946-8308  
STREET ADDRESS: 4200 W. Harry St. P.O. Box 12250  
CITY: Wichita STATE: Kansas ZIP CODE: 67277  
PREPARED BY: Dennis Wilson PHONE NUMBER: (316)946-8308  
DATE PREPARED: November 5, 1990 DATE REVISED: January 4, 2000

SECTION 2 - HAZARDOUS INGREDIENTS

HAZARDOUS INGREDIENTS	%/RANGE	CAS NUMBER	OSHA PEL	ACGIH TLV
Tungsten	99	7440-33-7	N/A	5mg/m3
Zirconium(dry)	1	7440-67-7	5mg/M3	5mg/m3

SECTION 313. SUPPLIER INFORMATION

THIS PRODUCT DOES [ ] DOES NOT [ X ] CONTAIN TOXIC CHEMICALS SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF THE EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT OF 1986 AND OF 40 CFR 372.

CAS NUMBER	CHEMICAL NAME	%
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SECTION 3 - PHYSICAL DATA

PHYSICAL STATE: Solid ODOR AND APPEARANCE: Gray Metal Cylinder, No Odor  
VAPOR PRESSURE(mm Hg): N.App. VAPOR DENSITY(air=1): N.App.  
EVAPORATION RATE: N.App. BOILING POINT(F/C): 5660C. FREEZING POINT(F/C): N.App.  
pH: N.App. SPECIFIC GRAVITY: 19 SOLUBILITY: Not Soluble

SECTION 4 - FIRE AND EXPLOSION DATA

FLAMMABILITY: Yes [ ] No [X] IF YES, MEANS OF EXTINCTION: Not Flammable  
FLASHPOINT(F/C) and METHOD: N.App. FLAMMABLE LIMIT: N.App.  
LEL: N.App. UEL: N.App. UNUSUAL FIRE AND EXPLOSION HAZARDS: Welding arc and sparks can ignite combustible materials. Zirconium is dangerous in the form of dust, by chemical reaction to air, when exposed to heat of flame, or the chemical reaction with oxidizers. Refer to ANSI Z49.1, "Safety In Welding And Cutting" published by the American Welding Society.

N.App.: NON APPLICABLE; N.Av.: NOT AVAILABLE; N.Est.: NOT ESTABLISHED  
N.F.P.A. RATING SYSTEM: 0 - INSIGNIFICANT; 1 - SLIGHT; 2 - MODERATE;  
3 - HIGH; 4 - EXTREME

Health = 1 Flammability = 0 Reactivity = 0 Special = \_  
WHMIS CLASSIFICATION: CLASS "D" DIVISION 2 SUB-DIVISION "G"

SECTION 5 - REACTIVITY DATA

CHEMICAL STABILITY: Yes [X] No [ ] IF NO, CONDITIONS TO AVOID: N.App.  
INCOMPATIBILITY WITH OTHER SUBSTANCES: Yes [ ] No [X] IF YES, WHICH ONES?  
None Known HAZARDOUS POLYMERIZATION: Will Occur [ ] Will Not Occur [X]  
CONDITIONS TO AVOID: N. App. HAZARDOUS DECOMPOSITION PRODUCTS: Welding

fumes (oxides of metal being welded and gases, such as carbon monoxide, ozone and oxides of nitrogen) depending on the process, procedure and metal welded. Some loss of electrode will occur.

#### SECTION 6 - HEALTH HAZARD DATA

ROUTE OF ENTRY: SKIN CONTACT [ ] SKIN ABSORPTION [ ] EYE CONTACT [ ]  
INGESTION [ ] INHALATION [X] Inhalation of the fumes generated during welding  
EFFECTS OF ACUTE/CHRONIC EXPOSURE TO PRODUCT: Most studies have found tungsten to be toxicologically inert. TOXICITY: N.App. REPRODUCTION: (As Tungsten)  
Oral Rat TDLo - 1210 ug/Kg (35w pre) CARCINOGENICITY: Not Currently Listed  
SIGNS AND SYMPTOMS OF EXPOSURE: Breathing difficulty, headache, nausea, dryness or irritation of nose, throat, eyes. Burning sensation of skin or eyes. Unconsciousness. MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: Respiratory problems, erythmas.  
EMERGENCY AND FIRST AID PROCEDURES: Remove to fresh air. If breathing impaired, assisted respiration may be required. Treat U.V. exposure similar to severe sunburn, seek medical attention!

#### SECTION 7 - PRECAUTIONS FOR SAFE HANDLING AND USE

LEAK AND SPILL PROCEDURE: N.App. WASTE DISPOSAL METHOD: Dispose of in accordance with local, state and federal regulations. PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: N.App. OTHER PRECAUTIONS: None

#### SECTION 8 - CONTROL MEASURES

RESPIRATORY PROTECTION: Use a NOISH approved respirable fume respirator when welding in confined spaces and whenever fume concentrations exceed applicable limits for zirconium, tungsten or other welding fumes. All requirements set forth in 29 CFR 1910.134 should be met.  
GLOVES: Welders Gloves RESPIRATOR: See Above EYE: Face shield or welders helmet with proper filter lens. FOOTWEAR: Suitable for metal working  
CLOTHING: Dark, substantial- aprons, etc. OTHER: As recommended by ANSI Z49.1  
VENTILATION: General and/or local exhaust at the welding arc recommended. If such equipment is is not available, use respirators as specified above.  
OTHER: Air sampling if necessary to determine corrective measures  
WORK/HYGIENIC PRACTICES: Operator trained to avoid electrical shock and UV ray exposure.

#### REFERENCES:

"Chemical Guide To OSHA Hazard Communication Standard" First Edition  
"Handbook Of Toxic And Hazardous Chemicals and Carcinogens" Second Edition  
"Registry Of Toxic Effects Of Chemical Substances"

THIS DATA IS OFFERED IN GOOD FAITH AS TYPICAL VALUES. THIS IS NEITHER AN EXPRESSED NOR IMPLIED PRODUCT SPECIFICATION. RECOMMENDED HANDLING PROCEDURES AND HYGIENE ARE BELIEVED TO BE ACCURATE, HOWEVER, THESE RECOMMENDATIONS SHOULD BE REVIEWED IN THE SPECIFIC CONTEXT OF INTENDED USE AND DETERMINED APPROPRIATE BY THE USER.