

MATERIAL SAFETY  
DATA SHEET

OSRAM SYLVANIA INC.  
CHEMICAL AND METALLURGICAL DIV.  
TOWANDA, PA. 18848  
TELEPHONE: 717-268-5000

ISSUE DATE: 03-14-94  
SUPERSEDES: 09-19-93 \* CHANGE \*\* ADDITION \*\*\* CORRECTION

CHEMICAL NAME: THORIATED TUNGSTEN ELECTRODES (VARIOUS SIZES)

TRADE NAME AND SYNONYMS: THORIA TUNGSTEN ELECTRODES; TIG WELDING  
ELECTRODES; GTA WELDING ELECTRODES

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FORMULA: W WITH 1 OR 2% THO2

CAS NUMBER: TUNGSTEN: 7440-33-7 THORIUM OXIDE: 1314-20-1

PHYSICAL DATA

APPEARANCE AND ODOR: GRAY METAL/NO ODOR

BOILING POINT: 5660 C SPECIFIC GRAVITY (H2O=1): 19

VAPOR PRESSURE (MM HG): NA PERCENT VOLATILE BY VOLUME: 0

VAPOR DENSITY (AIR=1): NA EVAPORATION RATE: NA

SOLUBILITY IN WATER: INSOLUBLE HOW BEST MONITORED: AIR SAMPLE

HAZARDOUS INGREDIENTS

MATERIAL	PERCENT BY WEIGHT	OSHA PEL	ACGIH TLV
TUNGSTEN	98 OR 99%	-----	5MG/M3

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THORIUM DIOXIDE \*\*                      1 OR 2%                      \*                      \*

\*NOTE: LIMITS FOR THORIUM DIOXIDE HAVE NOT BEEN ESTABLISHED BY THE  
ACGIH. ALL APPLICABLE REQUIREMENTS FOR RADIOACTIVE MATERIALS,  
INCLUDING EXPOSURE LIMITS, CONTAINED IN 29 CFR 1910.96 (OSHA)  
AND 10 CFR PARTS 20 & 40 (NRC) SHOULD BE MET.

\*\*NOTE: THIS CHEMICAL IS SUBJECT TO THE REPORTING REQUIREMENTS OF  
SECTION 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND RE-  
AUTHORIZATION ACT OF 1986 AND 40 CFR PART 372.

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HEALTH HAZARD DATA  
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ROUTES OF EXPOSURE: INHALATION OF FUMES GENERATED DURING WELDING.

EFFECTS OF OVEREXPOSURE: SHORT-TERM OVEREXPOSURE TO WELDING FUMES MAY  
RESULT IN DISCOMFORT SUCH AS DIZZINESS, NAUSEA, AND/OR IRRITATION OF  
THE EYES, NOSE AND THROAT. OTHER EFFECTS DEPEND ON THE METAL BEING  
WELDED AND THE WELDING CONDITIONS. TIG WELDING ELECTRODES ARE NON-  
CONSUMABLE. HOWEVER, SOME LOSS OF ELECTRODE METAL MAY OCCUR DEPEND-  
ING ON WELDING CONDITIONS. WITH THE EXCEPTION OF TWO RUSSIAN STUDIES  
THAT FOUND EARLY SIGNS OF PULMONARY FIBROSIS IN SOME WORKERS EXPOSED  
TO TUNGSTEN AND TUNGSTEN TRIOXIDE DUST, MOST STUDIES HAVE SHOWN  
TUNGSTEN TO BE TOXICOLOGICALLY INERT. THORIUM DIOXIDE IS A NATURALLY  
OCCURRING RADIOACTIVE ELEMENT. IT IS AN ALPHA EMITTER AND, AS SUCH,  
ITS PRIMARY HAZARD LIES IN INHALATION OF DUST/FUMES. NORMAL HANDLING  
OF THESE ELECTRODES ARE NOT EXPECTED TO RESULT IN ANY SIGNIFICANT  
EXTERNAL RADIATION EXPOSURE. CONSIDERABLE EXPERIENCE IN REFINING AND  
USE OF THORIUM HAS NOT REVEALED ANY ADVERSE EFFECTS FROM INDUSTRIAL  
EXPOSURE.

EMERGENCY AND FIRST AID PROCEDURES:

INHALATION: IF IRRITATION, DISCOMFORT OR OTHER SIGNS OF PULMONARY  
INVOLVEMENT DEVELOP REMOVE FROM EXPOSURE AND SEEK MEDICAL ATTENTION.  
EYE CONTACT: IF IRRITATION OCCURS DUE TO WELDING FUMES, FLUSH WITH  
COPIOUS AMOUNTS OF WATER. IF IRRITATION PERSISTS, SEEK MEDICAL

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ATTENTION.

SKIN CONTACT: ADVERSE REACTIONS FROM CONTACT WITH THESE ELECTRODES ARE  
UNLIKELY. PROMPT MEDICAL ATTENTION SHOULD BE OBTAINED FOR BURNS OR  
IRRITATION RESULTING FROM THE WELDING PROCESS.

CARCINOGENIC ASSESSMENT (NTP ANNUAL REPORT, IARC MONAGRAPHS, OTHER):

THORIUM DIOXIDE HAS BEEN IDENTIFIED AS A CARCINOGEN BY THE NTP AND  
IARC. EVIDENCE FOR ITS ABILITY TO CAUSE CANCER HAS COME SOLELY FROM  
ITS INTERNAL MEDICAL USE.

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FIRE AND EXPLOSION HAZARD DATA  
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FLASH POINT: NA TEST METHOD USED:

FLAMMABLE LIMITS: NA LEL: UEL:

EXTINGUISHING MEDIA: NON FLAMMABLE

SPECIAL FIRE FIGHTING PROCEDURES: NONE

UNUSUAL FIRE AND EXPLOSION HAZARDS: WELDING ARC AND SPARKS CAN IGNITE  
COMBUSTIBLES. REFER TO ANSI Z49.1, "SAFETY IN WELDING AND CUTTING"  
PUBLISHED BY THE AMERICAN WELDING SOCIETY FOR FIRE PREVENTION AND  
PROTECTION INFORMATION DURING WELDING.

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REACTIVITY DATA  
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STABILITY: STABLE

CONDITIONS TO AVOID: NA

INCOMPATIBILITY (MATERIALS TO AVOID): NONE

HAZARDOUS DECOMPOSITION PRODUCTS: WELDING FUMES (OXIDES OF METAL BEING  
WELDED) AND GASES (SUCH AS CARBON MONOXIDE, OZONE AND OXIDES OF NITRO-  
GEN) DEPENDING ON THE PROCESS, PROCEDURE AND METAL WELDED. SOME LOSS

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OF METAL FROM THE ELECTRODE DOES OCCUR.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

CONDITIONS TO AVOID: NA

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SPILL OR LEAK PROCEDURES  
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STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

NOT APPLICABLE

WASTE DISPOSAL METHOD:

DISPOSE OF IN ACCORDANCE WITH APPROPRIATE GOVERNMENT REGULATIONS.

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SPECIAL PROTECTION INFORMATION  
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RESPIRATORY PROTECTION: USE A NIOSH APPROVED RESPIRABLE FUME RESPIRATOR  
WHEN WELDING IN CONFINED SPACES AND WHENEVER FUME CONCENTRATIONS  
EXCEED APPLICABLE LIMITS FOR THORIUM, TUNGSTEN OR OTHER WELDING  
FUMES. ALL APPROPRIATED REQUIREMENTS SET FORTH IN 29 CFR 1910.134  
SHOULD BE MET.

VENTILATION: USE ENOUGH GENERAL VENTILATION AND/OR LOCAL EXHAUST AT THE  
ARC TO KEEP THE FUMES AND GASES BELOW APPLICABLE LIMITS IN THE  
WORKER'S BREATHING ZONE AND THE GENERAL AREA. IF SUCH EQUIPMENT IS  
NOT AVAILABLE, USE RESPIRATORS AS SPECIFIED ABOVE.

PROTECTIVE GLOVES: WELDERS GLOVES ARE RECOMMENDED.

EYE PROTECTION: WEAR HELMET OR USE FACE SHIELD WITH APPROPRIATE FILTER  
LENS. PROVIDE PROTECTIVE SCREENS AND FLASH GOGGLES, IF NECESSARY, TO  
SHIELD OTHERS.

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OTHER PROTECTIVE EQUIPMENT: WEAR HEAD, HAND AND BODY PROTECTION TO PRE-  
VENT INJURY FROM ARC RADIATION, SPARKS AND ELECTRICAL SHOCK. SEE  
ANSI Z49.1. AT A MINIMUM THIS INCLUDES WELDER'S GLOVES AND A PRO-  
TECTIVE FACE SHIELD, AND MAY INCLUDE ARM PROTECTORS, APRONS, HATS,  
SHOULDER PROTECTION, AS WELL AS DARK SUBSTANTIAL CLOTHING. WELDER  
SHOULD BE TRAINED NOT TO TOUCH LIVE ELECTRICAL PARTS AND TO INSULTATE  
HIMSELF FROM WORK AND GROUND.

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SPECIAL PRECAUTIONS  
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PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: NONE

OTHER PRECAUTIONS: NONE

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IN CASE OF QUESTIONS, PLEASE CALL:

OSRAM SYLVANIA INC.

INDUSTRIAL HYGIENIST, 717-268-5000  
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