Abicor Binzel USA
Medimmune Ct. Suite 110
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Material Safety Data Sheet

Conforms to ANSI Z400.5-2004 Standard (United States, Canada, Mexico).
Thoriated Tungsten Electrodes

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: Thoriated Tungsten Electrodes
Trade name: EWTh-1 or EWTh-2; Thoria Tungsten Electrodes; TIG Welding Electrodes; GTA Welding Electrodes
Material uses: TIG Welding

Supplier: Astaras Welding Accessories
6901 Bryan Dairy Rd. Unit #160
Largo, FL 33777
Tel : (727) 546-9600
Fax : (727) 546-9699

Manufacturer: Shandong Weldstone Tungsten Industry Co., LTD.
188 Zhoulong Rd
Zhoucun District, Zibo City
Shandong Province, PR China 255300
Tel : 865336824658
Fax : 865336823685

MSDS authored by: KMK Regulatory Services Inc.
In case of emergency: CHEMTREC, U.S.: 1-800-424-9300 International: +1-703-527-3887
Product type: Solid.

2. HAZARDS IDENTIFICATION

Emergency overview
Color: Gray.
Physical state: Solid.
Odor: Odorless.
Signal word: WARNING!
Hazard statements: CONTAINS MATERIAL THAT CAN CAUSE TARGET ORGAN DAMAGE. CANCER HAZARD – CONTAINS MATERIAL WHICH CAN CAUSE CANCER.
Precautions: Avoid exposure – obtain special instructions before use. Do not breathe dust. Do not get on skin or clothing. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.
OSHA/HCS status: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Routes of entry: Dermal contact. Eye contact. Inhalation. Ingestion.
Potential acute health effects
Inhalation: No known significant effects or critical hazards.
Ingestion: No known significant effects or critical hazards.
Skin: No known significant effects or critical hazards.
Eyes: Dust particules or fumes may cause eye irritation.
Potential chronic health effects
Chronic effects : Contains material that can cause target organ damage.
Carcinogenicity : Contains material which can cause cancer. Risk of cancer depends on duration and level of exposure.
Mutagenicity : No known significant effects or critical hazards.
Teratogenicity : No known significant effects or critical hazards.
Developmental effects : No known significant effects or critical hazards.
Fertility effects : No known significant effects or critical hazards.
Target organs : Contains material which causes damage to the following organs: blood, upper respiratory tract, skin, eye, lens or cornea.

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2. HAZARDS IDENTIFICATION (cont.)

Over-exposure signs/symptoms
Inhalation : No specific data.
Ingestion : No specific data.
Skin : No specific data.
Eyes : No specific data.

Medical conditions aggravated by over-exposure: Repeated or prolonged exposure to the substance can produce target organs damage. Prolonged or repeated contact may cause eye irritation.
See toxicological information (section 11)

3. COMPOSITION/INFORMATION ON INGREDIENTS

United States	Name	CAS number	%
	Tungsten	7440-33-7	60-100
	Thorium oxide	1314-20-1	1-5

Canada	Name	CAS number	%
	Tungsten	7440-33-7	60-100
	Thorium oxide	1314-20-1	1-5

Mexico	Name	CAS number	UN number	%	IDLH
	Tungsten	7440-33-7	Not regulated.	60-100	-
	Thorium oxide	1314-20-1	Not regulated.	1-5	-
	Classification	H F R 1 1 0 1 1 0		Special	

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4. FIRST AID MEASURES

Eye contact: Immediately flush eyes with plenty of water for at least 20 minutes, occasionally lifting the upper and lower eyelids. Get medical attention.

Skin contact: In case of contact, immediately flush skin with plenty of water for at least 20 minutes. Get medical attention.

Inhalation: Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Get medical attention.

Ingestion: Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Protection of first-aiders: No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

Notes to physician No specific treatment. Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Flammability of the product: No specific fire or explosion hazard.

Extinguishing media

Suitable: Use an extinguishing agent suitable for the surrounding fire.
Not suitable: None known.

Special exposure hazards: Welding arcs 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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5. FIRE-FIGHTING MEASURES (cont.)

Hazardous thermal decomposition products: Decomposition products may include the following materials: metal oxide/oxides

Special protective equipment for fire fighters: Fire fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).

Environmental precautions: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods for cleaning up

Small spill: Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.

Large spill: Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.

Note: see section 1 for emergency contact information and section 13 for waste disposal.

7. HANDLING AND STORAGE

Handling: Put on appropriate personal protective equipment (see section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Do not ingest. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area. Nobody should be permanent or not longer than necessary in a close area to the stored electrodes, because of the beta and gamma radiation and probably additional measurements should be taken to protect from the beta and gamma radiation.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

United States

Ingredient	Exposure limits
Tungsten	NIOSH REL (United States, 12/2001). STEL: 10 mg/m3 15 minute(s). TWA: 5 mg/m3 10 hour(s).

Canada

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredient	List name	ppm	mg/m3	Other	ppm	mg/m3	Other	ppm	mg/m3	Other	Notations
Tungsten, as W	AB 6/2008	-	5	-	-	10	-	-	-	-	[A]
Tungsten	BC 6/2008	-	5	-	-	10	-	-	-	-	

Notes: [A]as W

Mexico

Ingredient	Exposure limits
Tungsten	NOM-010-STPS (Mexico, 9/2000). LMPE-CT: 10 mg/m3, (as W) 15 minute(s). LMPE-PPT: 5 mg/m3, (as W) 8 hour(s).

Consult local authorities for acceptable exposure limits.

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8. EXPOSURE CONTROLS/PERSONAL PROTECTION (cont.)

Recommended monitoring procedures: Personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

Engineering measures: Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits.

Hygiene measures: Ensure that eyewash stations and safety showers are close to the workstation location. Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period.

Personal protection

Respiratory: Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Recommend: Use appropriate NIOSH approved dust respirator if PEL/TLV may be exceeded.

Hands : Use gloves appropriate for work or task being performed. Recommended: Natural rubber (latex).

Eyes: Safety eyewear should be used when there is a likelihood of exposure. Recommend: Safety glasses with side shields.

Skin: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Recommend: Lab coat.

Environmental exposure controls: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state: Solid.
Color: Gray.
Odor: Odorless.
Boiling/condensation point: 5660°C (10220°F)
Melting/freezing point: <3400°C (<6152°F)
Relative density: 19
Solubility: Insoluble in the following materials: cold water and hot water.

10. STABILITY AND REACTIVITY

Chemical stability: The product is stable.
Conditions to avoid: Avoid exposure – obtain special instructions before use.
Materials to avoid: Incompatible with some strong acids.
Hazardous decomposition products: Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Possibility of hazardous reactions: Under normal conditions of storage and use, hazardous reactions will not occur.
Hazardous polymerization: Under normal conditions of storage and use, hazardous polymerization will not occur.

11. TOXOCOLOGICAL INFORMATION

Acute toxicity:

Product/ingredient name	Result	Species	Dose	Exposure
Thorium dioxide	LD50 Intratracheal	Rat	>1140mg/kg	-

Chronic toxicity:
Carcinogenicity Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
Thorium dioxide	-	-	-	-	Proven	-

12. ECOLOGICAL INFORMATION

Environmental effects: Not established

Thoriated Tungsten Electrodes

13. DISPOSAL CONSIDERATIONS

Waste disposal: The generation of waste should be avoided or minimized wherever possible. This material and its container must be disposed of in a safe way. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Empty containers or liners may retain some product residues. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor.

Disposal should be in accordance with applicable regional, national and local laws and regulations. Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14. TRANSPORT INFORMATION

Regulatory information	UN #	Proper Shipping Name	Classes	PG*	Label
DOT Classification, TDG Classification, Mexico Classification, IMDG Class, and IATA-DGR Class	UN2909	RADIOACTIVE MATERIAL, EXCEPT PACKAGE-ARTICLES MANUFACTURED FROM NATRUAL URANUIM [OR] NATRUAL THORUIM	7	-	-

*PG: Packing group **AERG**: 161

Exemption to the above classification may apply.

15. REGULARTORY INFORMATION

United States

HCS Classification: Carcinogen, Target organ effects

U.S. Federal regulations: TSCA 8(a) PAIR: Tungsten

United States inventory (TSCA 8b): All components are listed or exempted.
SARA 302/304/311/312 extremely hazardous substances: No products were found.
SARA 302/304 emergency planning and notification: No products were found.
SARA 302/304/311/312 hazardous chemicals: Tungsten; Thoruim oxide
SARA 311/312 MSDS distribution - chemical inventory - hazard identification:
Tungsten: Immediate (acute) health hazard, Delayed (chronic) health hazard;
Thoruim oxide: Delayed (chronic) health hazard.
Clean Water Act (CWA) 307: No products were found.
Clean Water Act (CWA) 311: No products were found.
Clean Air Act (CAA) 112 accidental release prevention: No products were found.
Clean Air Act (CAA) 112 regulated flammable substances: No products were found.
Clean Air Act (CAA) 112 regulated toxic substances: No products were found.

Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs): Not listed
Clean Air Act Section 602 Class I Substances: Not listed
Clean Air Act Section 602 Class II Substances: Not listed
DEA List I Chemicals (Precursor Chemicals): Not listed
DEA List II Chemicals (Essential Chemicals): Not listed

SARA 313	Product name	CAS number	Concentration
Form R – Reporting requreiments:	Thorium dioxide	1314-20-1	1-5
Supplier notification:	Thorium dioxide	1314-20-1	1-5

SARA 313 notifications must not me detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

State regulations:

Connecticut Carcinogen Reporting: None of the components are listed.
Connecticut Hazardous Material Survey: None of the components are listed.
Florida substances: None of the components are listed.
Illinois Chemical Safety Act: None of the components are listed.
Illinois Toxic Substances Disclosure to Employee Act: None of the components are listed.
Louisiana Reporting: None of the components are listed.
Louisiana Spill: None of the components are listed.
Massachusetts Spill: None of the components are listed.

15: REGULARTORY INFORMATION (cont.)

Massachusetts Substances: The following components are listed: Tungsten; Thorium oxide
Michigan Critical Material: None of the components are listed.
Minnesota Hazardous Substances: None of the components are listed.
New Jersey Hazardous Substances: The following components are listed: Tungsten; Thorium oxide
New Jersey Spill: None of the components are listed.
New Jersey Toxic Catastrophe Prevention Act: None of the components are listed.
New York Acutely Hazardous Substances: None of the components are listed.
New York Toxic Chemical Release Reporting: None of the components are listed.
Pennsylvania RTK Hazardous Substances: The following components are listed: Tungsten; Thorium oxide
Rhode Island Hazardous Substances: None of the components are listed.

California prop. 65: WARNING: This product contains a chemical known to the State of California to cause cancer.

Ingredient name	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level
Thorium dioxide	Yes.	No.	No.	No.

Canada

WHMIS (Canada):Class D-2A: Material causing other toxic effects (Very toxic).

Canadian lists:

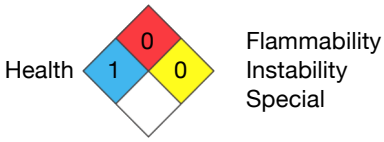
CEPA Toxic substances: The following components are listed: Thoriated Tungsten Electrodes
Canadian ARET: None of the components are listed.
Canadian NPRI: The following components are listed: Thorium dioxide
Alberta Designated Substances: None of the components are listed.
Ontario Designated Substances: None of the components are listed.
Quebec Designated Substances: None of the components are listed.

Canada inventory: All components are listed or exempted.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Mexico

Classification:



International regulations:

International lists:

Australia inventory (AICS): All components are listed or exempted.
China inventory (IECSC): Not determined
Japan inventory: Not determined.
Korea inventory: All components are listed or exempted.
New Zealand Inventory of Chemicals (NZIoC): Not determined.
Philippines inventory (PICCS): Not determined

Chemical Weapons Convention List Schedule I Chemicals: Not listed
Chemical Weapons Convention List Schedule II Chemicals: Not listed
Chemical Weapons Convention List Schedule III Chemicals: Not listed

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16. OTHER INFORMATION

United States

Label requirements : CANCER HAZARD – CONTAINS MATERIAL WHICH CAN CAUSE CANCER. CONTAINS MATERIAL WHICH CAUSES DAMAGE TO THE FOLLOWING ORGANS: BONES, BLOOD, RESPIRATORY TRACT, SKIN, EYE, LENS OR CORNEA.

Hazardous Material Information System (U.S.A.):

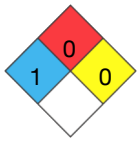
Health *	1
Flammability	0
Physical hazards	0

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks Although HMIS® ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.):

Health



Flammability
Instability
Special

Canada

WHMIS (Canada):

Date of issue: 05/01/2009
Date of previous Issue: 08/15/2006
Version: 2

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.