

(10-2017)  
10 CFR 30, 32,  
33, 34, 35, 36,  
37, 39, and 40



**APPLICATION FOR MATERIALS LICENSE**

Estimated burden per response to comply with this mandatory collection request: 4.3 hours. Submittal of the application is necessary to determine that the applicant is qualified and that adequate procedures exist to protect the public health and safety. Send comments regarding burden estimate to the Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NE0B-10202, (3150-0120), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

**INSTRUCTIONS: SEE THE CURRENT VOLUMES OF THE NUREG-1556 TECHNICAL REPORT SERIES ("CONSOLIDATED GUIDANCE ABOUT MATERIALS LICENSES") FOR DETAILED INSTRUCTIONS FOR COMPLETING THIS FORM: <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1556/>. SEND TWO COPIES OF THE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED BELOW.**

**APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:**

MATERIALS SAFETY LICENSING BRANCH  
DIVISION OF MATERIAL SAFETY, STATE, TRIBAL AND RULEMAKING PROGRAMS  
OFFICE OF NUCLEAR MATERIALS SAFETY AND SAFEGUARDS  
U.S. NUCLEAR REGULATORY COMMISSION  
WASHINGTON, DC 20555-0001

**ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS:**

**IF YOU ARE LOCATED IN:**

ALABAMA, CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, FLORIDA, GEORGIA, KENTUCKY, MAINE, MARYLAND, MASSACHUSETTS, NEW HAMPSHIRE, NEW JERSEY, NEW YORK, NORTH CAROLINA, PENNSYLVANIA, PUERTO RICO, RHODE ISLAND, SOUTH CAROLINA, TENNESSEE, VERMONT, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA,

**SEND APPLICATIONS TO:**

LICENSING ASSISTANCE TEAM  
DIVISION OF NUCLEAR MATERIALS SAFETY  
U.S. NUCLEAR REGULATORY COMMISSION, REGION I  
2100 RENAISSANCE BOULEVARD, SUITE 100  
KING OF PRUSSIA, PA 19406-2713

**IF YOU ARE LOCATED IN:**

ILLINOIS, INDIANA, IOWA, MICHIGAN, MINNESOTA, MISSOURI, OHIO, OR WISCONSIN, SEND APPLICATIONS TO:

MATERIALS LICENSING BRANCH  
U.S. NUCLEAR REGULATORY COMMISSION, REGION III  
2443 WARRENVILLE ROAD, SUITE 210  
LISLE, IL 60532-4352

**IF YOU ARE LOCATED IN:**

ALASKA, ARIZONA, ARKANSAS, CALIFORNIA, COLORADO, HAWAII, IDAHO, KANSAS, LOUISIANA, MISSISSIPPI, MONTANA, NEBRASKA, NEVADA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, OREGON, PACIFIC TRUST TERRITORIES, SOUTH DAKOTA, TEXAS, UTAH, WASHINGTON, OR WYOMING,

**SEND APPLICATIONS TO:**

NUCLEAR MATERIALS LICENSING BRANCH  
U.S. NUCLEAR REGULATORY COMMISSION, REGION IV  
1600 E. LAMAR BOULEVARD  
ARLINGTON, TX 76011-4511

**PERSONS LOCATED IN AGREEMENT STATES SEND APPLICATIONS TO THE U.S. NUCLEAR REGULATORY COMMISSION ONLY IF THEY WISH TO POSSESS AND USE LICENSED MATERIAL IN STATES SUBJECT TO U.S. NUCLEAR REGULATORY COMMISSION JURISDICTIONS.**

1. THIS IS AN APPLICATION FOR (Check appropriate item)

- A. NEW LICENSE
- B. AMENDMENT TO LICENSE NUMBER \_\_\_\_\_
- C. RENEWAL OF LICENSE NUMBER \_\_\_\_\_

2. NAME AND MAILING ADDRESS OF APPLICANT (Include zip code)

CVI Technology, LLC  
2870 North Berkeley Lake Rd. Ste 3  
Duluth Ga 30096

3. ADDRESS WHERE LICENSED MATERIALS WILL BE USED OR POSSESSED

2870 North Berkeley Lake Rd. Ste 3  
Duluth Ga 30096  
(Warehouse for receiving pre-packaged Thoriated Tungsten Electrodes and distributing/selling them to customers.)

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

Liang You

BUSINESS TELEPHONE NUMBER  
770.609.8032

BUSINESS CELLULAR TELEPHONE NUMBER  
404.543.2662

BUSINESS E-MAIL ADDRESS  
liang.you@weldingcity.com

SUBMIT ITEMS 5 THROUGH 11 ON 8-1/2 X 11" PAPER. THE TYPE AND SCOPE OF INFORMATION TO BE PROVIDED IS DESCRIBED IN THE LICENSE APPLICATION GUIDE.

5. RADIOACTIVE MATERIAL  
a. Element and mass number; b. chemical and/or physical form; and c. maximum amount which will be possessed at any one time.

6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED.

8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS.

7. INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING AND EXPERIENCE.

10. RADIATION SAFETY PROGRAM.

9. FACILITIES AND EQUIPMENT.

12. LICENSE FEES (Fees required only for new applications, with few exceptions\*)  
(See 10 CFR 170 and Section 170.31)

\*Amendments/Renewals that increase the scope of the existing license to a new or higher fee category will require a fee.

FEE CATEGORY

Exempt Distribution

AMOUNT ENCLOSED \$

\$2100

PER THE DEBT COLLECTION IMPROVEMENT ACT OF 1996 (PUBLIC LAW 104-134), YOU ARE REQUIRED TO PROVIDE YOUR TAXPAYER IDENTIFICATION NUMBER. PROVIDE THIS INFORMATION BY COMPLETING NRC FORM 531: <https://www.nrc.gov/reading-rm/doc-collections/forms/nrc531info.html>.

13. CERTIFICATION. (Must be completed by applicant) THE APPLICANT UNDERSTANDS THAT ALL STATEMENTS AND REPRESENTATIONS MADE IN THIS APPLICATION ARE BINDING UPON THE APPLICANT.

THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION ON BEHALF OF THE APPLICANT, NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PARTS 30, 32, 33, 34, 35, 36, 37, 39, AND 40, AND THAT ALL INFORMATION CONTAINED HEREIN IS TRUE AND CORRECT TO THE BEST OF THEIR KNOWLEDGE AND BELIEF.

WARNING: 18 U.S.C. SECTION 1001 ACT OF JUNE 25, 1948 62 STAT. 749 MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION.

CERTIFYING OFFICER -- TYPED/PRINTED NAME AND TITLE  
Liang You (CEO)

SIGNATURE

DATE

8/20/2018

**FOR NRC USE ONLY**

TYPE OF FEE	FEE LOG	FEE CATEGORY	AMOUNT RECEIVED	CHECK NUMBER	COMMENTS
			\$		
APPROVED BY				DATE	

**Attachment I: Information Required in Form NRC-313 for Materials License Application  
for CVI Technology, LLC**

**Scope and Summary**

CVI Technology LLC (Duluth, Georgia) applies for a Materials License from NRC for importing pre-packaged Thoriated (less 4% Thoriated Oxide ThO<sub>2</sub>) Tungsten Electrode with physical dimension for each electrode rod from 0.040" (0.5mm) diameter to 5/32" (4.0mm) at length 6"-7" (150mm to 175mm). These Thoriated Tungsten electrodes are imported from China and will be used for Tungsten-Inert Gas (TIG) Welding in United States. The imported Thoriated Tungsten electrodes are transported from a U.S. Custom Warehouse via trucking to CVI Technology LLC's warehouse located in Duluth, Georgia. They are stored in CVI's warehouse for a short to medium-term duration before distributed to our customers in the U.S. as they are sold. The Thoriated Tungsten electrodes are fabricated and pre-packaged in China in standard plastic boxes (usually 10-pcs electrodes per box) then packaged in carton boxes. Safety warning label is attached in each plastic box. No material changing/processing such as alloying, grinding, re-fabrication, cutting, welding, etc. is performed in our warehouse and facility. These electrodes comply to American Welding Society (AWS) A5.12 and as per AWS document, "Concern regarding radiation exposure to the external body from these electrodes is minimal" and also "The risk of internal exposure during welding is negligible in most circumstances since the thoriated electrode is consumed at a very slow rate". ("Thoriated Tungsten Electrodes" <https://app.aws.org/technical/facts/fact-27-201405.pdf>).

**Item 5 to Item 11 Required in NRC Form 313**

- **ITEM 5 RADIOACTIVE MATERIAL**
  - A. Element and mass number: Thorium Th 90
  - B. Chemical and/or physical form: ThO<sub>2</sub>, alloying with pure Tungsten at less than 4% weight in pre-packaged products imported from China.
  - C. Maximum amount which will be stored in our warehouse at any one time: 75-Lb as ThO<sub>2</sub>.
- **ITEM 6 PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED.**
  - As welding electrodes in Tungsten-Inert Gas (TIG) welding.
- **ITEM 7 INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING AND EXPERIENCE.**
  - Liang You, Ph.D. (2007, EECS, Case Western Reserve University, Ohio)

- **ITEM 8 TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS.**
  - Dedicated area/warehouse shelves are assigned to store ThO<sub>2</sub>-Tungsten electrodes.
  - Dedicated personnel are assigned to be responsible for materials packaging and quantity checking.
  - While the radiation hazard from these devices is low, based on scientific studies that have been conducted by a variety of commercial firms and approved by regulatory agencies, like any industrial device, product or compound, there are some “common-sense” precautions that will lower the potential risks even further. For example, we ask warehouse workers should avoid storing the electrodes anywhere on their bodies, like in a shirt pocket, and should wash hands after touching the box of ThO<sub>2</sub>-Tungsten electrodes.
  - MSDS sheet (Attachment II) is available from our website and provided to workers and customers (see attached file).
- **ITEM 9 FACILITIES AND EQUIPMENT.**
  - Dedicated area/warehouse shelves are assigned to store ThO<sub>2</sub>-Tungsten electrodes.
- **ITEM 10 RADIATION SAFETY PROGRAM.**
  - No materials changing processes are allowed in our facility associated with these electrodes, such as grinding, welding, cutting, re-surfacing, etc.
  - Some “common-sense” precautions that will lower the potential risks even further as described above Item 8.
  - No other special radiation safety program is required in our warehouse for these electrodes since these materials are safe in their fabricated form when alloying with Tungsten (ThO<sub>2</sub> content is less than 4% weight).
  - MSDS sheet is available from our website and provided to our workers and customers.
- **ITEM 11 WASTE MANAGEMENT.**
  - No materials changing processes are allowed in our facility associated with these electrodes, such as grinding, welding, cutting, re-surfacing, etc. Therefore no special waste management is needed since we do not produce any waste containing ThO<sub>2</sub>. All products are fabricated and pre-packaged in China and we only store them for a period of time then distributed/sold to our customers.

# MATERIAL SAFETY DATA SHEET (MSDS)

## Thoriated Tungsten Electrodes

### SECTION 1 — PRODUCT AND COMPANY IDENTIFICATION

**Product identifier:** Thoriated Tungsten Electrodes

**Product use:** Welding; Metal-working operations

**Supplier name and address:** CVI Technology, LLC, 2870 North Berkeley Lake Rd., Ste 3, Duluth GA 30096  
Tel. 770.609.8032

### SECTION 2 — COMPOSITION/INFORMATION ON INGREDIENTS

<u>Ingredients</u>	<u>CAS #</u>	<u>% (weight)</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>	<u>LC<sub>50</sub>(rat, inh)</u> <u>(mg/m<sup>3</sup>/4hr)</u>	<u>LD<sub>50</sub>(mg/kg)</u> <u>rat, oral/dermal,</u> <u>rabbit</u>
Tungsten	7440-33-7	98-99	5mg/m <sup>3</sup> (Final Rule)	5mg/m <sup>3</sup>	>5400	N/Av
Thorium Dioxide	1314-20-1	1-2	N/Av	N/Av	N/Av	N/Av

### SECTION 3 — HAZARDS IDENTIFICATION

#### EMERGENCY OVERVIEW

Gray metal solid. No odor.  
Caution! May cause mild eye or skin irritation. Fumes may cause irritation of the respiratory tract.  
Contains material that may cause cancer.

#### POTENTIAL HEALTH EFFECT

**Target organs:** Eyes, skin, respiratory system, gastrointestinal system, blood, liver, kidneys.

**Signs and symptoms of short-term (acute) exposure:**

- *Inhalation:* Overexposure to cutting and welding fumes may result in mild irritation, cough, sore throat and wheezing. Thorium dioxide is a naturally occurring radioactive element. It is an alpha emitter and, as such, its primary hazard lies in inhalation of dust or fumes. Normal handling of these electrodes are not expected to result in any significant external radiation exposure.
- *Skin contact:* Adverse skin reactions from contact with electrodes are unlikely. Burns may occur from touching hot metal. Radioactive alpha particles normally cannot penetrate the upper layers of skin tissue.
- *Eye contact:* Fumes and/or gases produced during cutting or welding may cause mild irritation.
- *Ingestion:* No health effects expected from small amounts. Large amounts may cause gastrointestinal discomfort.

**Effects of long-term (chronic) exposure:** Contains Thorium dioxide, which may cause blood system, liver or kidney damage. Prolonged or repeated skin contact may cause drying and cracking of the skin (dermatitis).

**Other important hazards:** Contains material that may cause cancer. See TOXICOLOGICAL INFORMATION, Section 11.

### SECTION 4 — FIRST AID MEASURES

**Inhalation:** If breathing difficulties occur, remove victim to fresh air and obtain medical attention immediately.

**Skin contact:** Wash skin thoroughly with mild soap and running water. Obtain medical attention if irritation develops. Launder clothing before reuse. Seek medical attention for burns resulting from the cutting or welding process.

**Eye contact:** Immediately flush eyes with gently running water for at least 15 minutes. Obtain medical attention if pain or irritation persists.

**Ingestion:** Contact a physician or Poison Control Centre. DO NOT induce vomiting. Never give anything by mouth to an unconscious or convulsing person.

## SECTION 5 — FIRE FIGHTING MEASURES

**Fire hazards/conditions of flammability:** Product is non-flammable. Cutting and welding procedures may ignite combustible materials in the work area if proper safety precautions are not followed. May emit low levels of toxic and radioactive fumes if involved in a fire.

**Flash point:** N/Av

**Auto-ignition temperature:** N/Av

**Lower flammable limit (% by volume):** N/Av

**Upper flammable limit (% by volume):** N/Av

**Explosion data:** *Sensitivity to mechanical impact / static discharge:* Not expected to be sensitive to mechanical impact or static discharge under normal conditions.

**Oxidizing properties:** N/Av

**Suitable extinguishing media:** Use media appropriate for surrounding materials.

**Special fire-fighting procedures/equipment:** Firefighters should wear proper protective equipment and a self-contained breathing apparatus. Move containers from fire area if it can be done without risk. Water spray may be useful in minimizing or dispersing vapors and cooling equipment exposed to heat and flame.

**Hazardous combustion products:** Tungsten oxide and other irritating fumes and smoke.

## SECTION 6 — ACCIDENTAL RELEASE MEASURES

**Personal precautions:** Restrict access to area until completion of clean-up. Ensure clean-up is conducted by trained personnel only. All persons dealing with clean-up should wear the appropriate chemically protective equipment. Keep all other personnel upwind and away from the spill/release. Refer to Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION, for additional information on acceptable personal protective equipment.

**Environmental precautions:** Ensure spilled product does not enter drains, sewers, waterways, or confined spaces.

**Spill response/Cleanup:** Wear appropriate protective equipment. Eliminate all sources of heat and flame. Ventilate area of release. Stop leak if you can do so without risk. Pick up material immediately using non-sparking tools. Use methods which do not generate dusts. Transfer to clean, dry, suitable containers for later disposal (see Section 13). Notify the appropriate authorities as required.

**Prohibited materials:** None known.

## SECTION 7 — HANDLING AND STORAGE

**Safe handling procedures:** Wear appropriate protective equipment during handling. Use with adequate ventilation. Avoid inhaling vapors. Avoid contact with eyes, skin and clothing. Keep away from heat and flame. Keep away from incompatibles. Keep containers tightly closed when not in use. Wash thoroughly after handling.

**Storage requirements:** Store in a cool, dry, well-ventilated area away from all sources of ignition and incompatible materials. Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. Inspect periodically for damage or leaks. No smoking in the area.

**Incompatible materials:** Oxidizers, bromine trifluoride, chlorine trifluoride, fluorine, iodine, pentafluoride.

**Special packaging materials:** Always keep in containers made of the same materials as the supply container.

## SECTION 8 — EXPOSURE CONTROLS / PERSONAL PROTECTION

**Ventilation and engineering controls:** Use general ventilation or local exhaust during welding to keep fumes and gases below applicable limits.

**Respiratory protection:** In emergency situations or when concentrations are not known, a self-contained breathing apparatus may be required. Advice should be sought from respiratory protection specialists.

**Protective gloves:** Welder's gloves are required.

**Eye protection:** Wear helmet or face shield with appropriate lens during welding. Provide protective screens and flash goggles to screen others when necessary.

**Other protective equipment:** Wear body protection to prevent injury from arc radiation, sparks and electrical shock. An eyewash station and safety shower should be made available in the immediate working area. Other equipment may be required depending on workplace standards.

**Permissible exposure levels:** See Section 2.

## SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

**Physical form, color and odor:** Gray metal solid, no odor.

**Odor threshold:** N/Av



pH: N/Av  
Boiling point: 5660°C  
Evaporation rate (nBuAC=1): N/Av  
Specific gravity (water=1): 19  
Melting/freezing point: 3410°C (for pure tungsten)  
Coefficient of oil/water distribution: N/Av  
Vapor pressure (mm Hg @ 25°C): N/Av  
Solubility in water: Insoluble  
Vapor density (Air=1): N/Av  
Volatile organic compounds (VOC's): N/Av  
Percent Volatile by Weight: 0

## SECTION 10 — STABILITY AND REACTIVITY

**Stability and reactivity:** Stable under the recommended storage and handling conditions prescribed.  
**Hazardous polymerization:** Will not occur.  
**Conditions to avoid:** None known.  
**Materials to avoid:** Incompatible materials (see Section 7).  
**Hazardous decomposition products:** None known. Refer to 'Hazardous combustion products', Section 5.

## SECTION 11 — TOXICOLOGICAL INFORMATION

**Routes of exposure:** Skin contact, eye contact, ingestion and inhalation.  
**Toxicological data:** There is no available data for the product itself, only for the ingredients.  
**LD<sub>50</sub>:** See Section 2  
**LC<sub>50</sub>:** See Section 2  
**Carcinogenicity:** This product contains Thorium dioxide. Thorium dioxide is a naturally occurring radioactive element. It is an alpha emitter. Thorium dioxide is listed as a Known carcinogen by NTP, due to its radioactivity, and as carcinogenic to humans (Group 1) by IARC when administered intravenously.  
**Teratogenicity, mutagenicity, and other reproductive effects:** This product contains Tungsten. There is some evidence from animal data which indicates Tungsten may cause developmental abnormalities and embryotoxicity or fetotoxicity.  
**Sensitization to material:** None known.  
**Synergistic materials:** None known.  
**Conditions aggravated by exposure:** None known.

## SECTION 12 — ECOLOGICAL INFORMATION

**Ecotoxicological information:** The ecological characteristics of this product have not been fully investigated. The product should not be allowed to enter drains or water courses or be deposited where it can affect ground or surface waters. Do not discharge product unmonitored into the environment.  
**Chemical fate information:** There is no data available on the product itself.  
**Aquatic toxicity:** There is no data available on the product.

## SECTION 13 — DISPOSAL CONSIDERATIONS

**Handling for disposal:** Handle waste according to recommendations in Section 7.  
**Methods of disposal:** Containers should be disposed of in accordance with all applicable federal, provincial, state, and local regulations.

## SECTION 14 — TRANSPORT INFORMATION

**Canadian Transportation of Dangerous Goods Regulations (TDGR) Shipping Information:** This product is not regulated for transportation within United States and Canada.  
**US DOT 49 CFR information:** This product is not regulated for transportation by ground within the continental United States.

## SECTION 15 — REGULATORY INFORMATION

**WHMIS information:**

**Canadian WHMIS Classification:**

**Class D2A** (*Materials Causing Other Toxic Effects, Very Toxic Material*);

**Class D2B** (*Materials Causing Other Toxic Effects, Toxic Material*).

**CEPA information:** All ingredients are listed on the DSL.

**TSCA information:** All ingredients are listed on the TSCA inventory.

**HMIS Rating:** Health: 1; Flammability: 0; Reactivity: 0; Protective Equipment: B.

**SECTION 16 — OTHER INFORMATION**

**Legend:**

ACGIH: American Conference of Governmental Industrial Hygienists  
CAS: Chemical Abstract Services  
CEPA: Canadian Environmental Protection Act  
DSL: Domestic Substances List  
HMIS: Hazardous Materials Identification System  
HSDB: Hazardous Substances Data Bank  
IARC: International Agency for Research on Cancer  
N/Ap: not applicable  
N/Av: not available  
NIOSH: National Institute of Occupational Safety and Health  
OSHA: Occupational Safety & Health Administration  
PEL: Permissible Exposure Limit  
PSI: Pounds per Square Inch  
RTECS: Registry of Toxic Effects of Chemical Substances  
TSCA: Toxic Substances Control Act  
TLV: Threshold Limit Values  
WHMIS: Workplace Hazardous Materials Information System

**References:**

1. ACGIH, Threshold Limit Values and Biological Exposure Indices for 2006.
2. International Agency for Research on Cancer Monographs, searched 2007.
3. Canadian Centre for Occupational Health and Safety, CCIInfoWeb databases, 2007 (Chempendium, HSDB and RTECs).

**Disclaimer:**

CVI Technology, LLC believes that the information contained in this Materials Safety Data Sheet (MSDS) is accurate. However CVI Technology, LLC does not express or imply any warranty with respect to this information.

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**END OF DOCUMENT**