

<b>Product Name</b>	BT Tungsten Electrodes
<b>Part Number</b>	900301-900303, 900320-900322, 900308, 900310-900313, 900330-900332, 900341-900343, 900350
<b>SDS Document Number</b>	SDS_BT_Tungsten_Electrodes_V1.2_201223
<b>Issue Date</b>	20/12/23

## 1 Product identifier & identity for the chemical

### 1.1 Product Identifier

Product Name: BT Lanthanated Tungsten Electrodes, BT Zirconated Tungsten Electrodes, BT 2% Thoriated Tungsten Electrodes, BT Ceriated Tungsten Electrodes, BT Rare Earth Tungsten Electrodes and BT Multi Pack Tungsten Electrodes

Part Numbers: 900301-900303, 900320-900322, 900308, 900310-900313, 900330-900332, 900341-900343, 900350

Synonyms: N/A

### 1.2 Other means of identification

N/A

### 1.3 Recommended use of the chemical and restrictions on use

Tungsten electrode for TIG welding. Not to be used for any other purpose.

### 1.4 Suppliers name, address and phone number

Supplier Name: Dynaweld Industrial Supplies Pty Ltd  
 Address: Building 2, 10 Jessica Place, Prestons NSW 2214, Australia  
 Phone: +61 2 8761 6500  
 Email: sales@dynaweld.com.au  
 Web Site: https://www.dynaweld.com.au

### 1.5 Emergency phone number

Emergency Phone: +61 2 8761 6500 (Australia)

## 2 Hazard Identification

### 2.1 Classification of the hazardous chemical

This product is classified as Hazardous Chemical – Non-Dangerous Goods according to Globally Harmonized System of classification and labelling of chemicals (GHS).

### 2.2 Label elements, including precautionary statements

Signal Word: DANGER

Symbols:



Hazard Statements:

H317	May cause an allergic skin reaction
H319	Causes eye irritation
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled
H340	Suspected of causing genetic defects
H351	Suspected of causing cancer
H370	Causes damage to organs (kidneys, respiratory system)
H372	Causes damage to organs through prolonged or repeated exposure
H410	Very toxic to aquatic life with long lasting effects

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<b>SDS Document Number</b>	SDS_BT_Tungsten_Electrodes_V1.2_201223
<b>Issue Date</b>	20/12/23

Precautionary Statements Prevention:

P201	Obtain special instructions before use
P202	Do not handle until all safety precautions have been read and understood
P260	Do not breathe dust/fume/gas/mist/vapours/spray
P261	Avoid breathing dust/fume/gas/mist/vapours/spray
P264	Wash thoroughly after handling
P270	Do not eat, drink or smoke when using this product
P272	Contaminated work clothing should not be allowed out of the workplace
P273	Avoid release to the environment
P280	Wear protective gloves/protective clothing/eye protection/face protection

Precautionary Statements Response

P284	In case of inadequate ventilation wear respiratory protection
P308 + P313	IF exposed or concerned: Get medical advice/attention
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P342 + P311	If experiencing respiratory symptoms: Call a POISON CENTER or doctor/ physician.
P302 + P352	IF ON SKIN: Wash with plenty of soap and water
P333 + P313	IF skin irritation or rash occurs: Get medical advice/attention
P363	Wash contaminated clothing before reuse
P308 + P311	If exposed or concerned: Seek medical advice / attention. Collect spillage.

Precautionary Statements Storage

P402 + P404	Store in a dry place. Store in a closed container
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Precautionary Statements Disposal

P501	Dispose of contents/container in accordance with local regulations
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**2.3 Other hazards which do not result in classification**

No other information provided.

**3 Composition/information on ingredients**

**3.1 Identity of chemical ingredients**

Name/ Tip Colour	Chemical Composition	Tungsten %
Thoriated / Red Tip	ThO <sub>2</sub> : 1.70-2.20	≥97.30
Lanthanated / Gold Tip	LaO <sub>2</sub> : 1:30-1:70	≥97.80
Ceriated/ Grey Tip	CeO <sub>2</sub> : 1:80-2.20	≥97.30
Zirconated / White Tip	ZrO <sub>2</sub> : 0:70-0:90	≥98.60
Rare Earth / Purple Tip	1.5% La <sub>2</sub> O <sub>3</sub> , 0.8% ZrO <sub>2</sub> & 0.8% Y <sub>2</sub> O <sub>3</sub>	≥96.88

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<b>Issue Date</b>	20/12/23

### 3.2 CAS number and other unique identifiers

Note: See section 3.1

### 3.3 Concentration of ingredients

Note: See section 3.1

## 4 First Aid Measures

### 4.1 Description of necessary first aid measures

General:	If exposed or concerned get medical advice / attention. Get medical advice/attention if you feel unwell.
Inhalation:	If fumes, aerosol or combustion products are inhaled remove from the contaminated area. Other measures are usually unnecessary
Skin contact:	Seek medical attention in event of irritation.  In case of burns: Quickly immerse affected area in cold running water for 10 to 15 minutes. Bandage lightly with a sterile dressing. Treat for shock if required. Lay patient down. Keep warm and rested. Transport to hospital or doctor.
Eye contact:	DO NOT attempt to remove particles attached to or embedded in eye. Lay victim down, on stretcher if available and pad BOTH eyes, make sure dressing does not press on the injured eye by placing thick pads under dressing, above and below the eye. Seek urgent medical assistance, or transport to hospital.
Ingestion:	Not considered a normal route of entry. If poisoning occurs, contact a doctor or Poisons Information Centre 13 11 26 (Australia).

### 4.2 Symptoms caused by exposure

Short-term (acute) overexposure to welding fumes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. May aggravate pre-existing respiratory problems (e.g. asthma, emphysema).

Note: Refer to Section 11 for further information.

### 4.3 Medical Attention and Special Treatment

Treat symptomatically.

## 5 Fire Fighting Measures

As shipped, this product is non-flammable. However, welding arc and sparks can ignite combustibles and flammable products. Read and understand *WTIA Technical Note No. 7 Health and Safety in Welding* before using this product.

### 5.1 Suitable extinguishing media

As shipped, the product will not burn. In case of fire in the surroundings, use CO<sub>2</sub>, powder or water fog / spray. There is no unsuitable extinguishing media known.

### 5.2 Specific hazards arising from the chemical

Fire may produce irritating or poisonous gases.

### 5.3 Special protective equipment and precautions for fire fighters

Special protective equipment:	Follow the general fire precautions indicated in the workplace. Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Special precautions:	Use firefighting procedures suitable for surrounding area. If safe to do so, remove containers from path of fire and prevent spillage from entering drains or water courses. May produce toxic fumes of metal oxides, poisonous fumes and corrosive fumes.

<b>Product Name</b>	BT Tungsten Electrodes
<b>Part Number</b>	900301-900303, 900320-900322, 900308, 900310-900313, 900330-900332, 900341-900343, 900350
<b>SDS Document Number</b>	SDS_BT_Tungsten_Electrodes_V1.2_201223
<b>Issue Date</b>	20/12/23

## 6 Accidental release measures

Unlikely due to form of product, however fumes may be released when the product is used.

### 6.1 Personal precautions, protective equipment and emergency procedures

If airborne dust and/or fumes are present use adequate engineering controls, and, if needed, personal protection to prevent overexposure.

*Note: Refer to recommendations in Section 8.*

### 6.2 Environmental precautions

Avoid release to the environment. Avoid dispersal of spilled material and contact with soil, ground and surface water drains and sewers.

### 6.3 Methods and materials for containment and cleaning up

Avoid generating dust. On land, sweep or shovel into suitable containers. Prevent product from entering any drains, sewers or water sources. During containment / clean up observe precautions with regard to the use of personal protective equipment.

*Note/s: For further information, see Section 8. Refer to Section 13 for proper disposal.*

## 7 Handling and Storage

### 7.1 Precautions for safe handling

Welding may produce dust, fumes, and gases hazardous to health. Avoid breathing dust, fumes, and gases. Use adequate ventilation. Keep away from sources of ignition. Avoid contact with skin, eyes and clothing. Do not eat, drink, and smoke in work areas. At the end of the work shift, hands and other exposed skin should be washed thoroughly. Follow good housekeeping practices to ensure that powders and dusts from grinding operations do not accumulate; such residue can be highly flammable and may pose special health hazards from thorium containing electrodes.

Tungsten-Thorium Oxide alloys are generally safe to handle during use under all normal conditions and environments. However, special precautions must be taken during the grinding or machining of tips of electrodes that contain Thorium Oxide to avoid the generation and subsequent inhalation and ingestion of dusts from these operations.

### 7.2 Conditions for safe storage, including any incompatibilities

Store in cool, dry, and well ventilated place. Keep away from incompatible materials. Keep away from heat and open flame.

Store in accordance with local/regional/national regulations.

## 8 Exposure controls/personal protection

### 8.1 Control parameters – exposure standards, biological monitoring

Use industrial hygiene monitoring equipment to ensure that exposure does not exceed the applicable national exposure limits.

Chemical Name	CAS No.	OSHA PEL	ACGIH TWA	ACGIH STEL
Tungsten	7440-33-7	5 mg/m <sup>3</sup>	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>
Thorium Dioxide	1314-20-1	-	-	-
Cerium Dioxide	1345-13-7	-	-	-
Lanthanum Dioxide	1312-81-8	15 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	-
Zirconium Oxide	1314-23-4	5 mg/m <sup>3</sup>	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>
Yttrium Oxide	1314-36-9	1 mg/m <sup>3</sup>	1 mg/m <sup>3</sup>	-

Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs) are values published by the American Conference of Government Industrial Hygienists (ACGIH). ACGIH Statement of Positions regarding the TLVs and BEIs states that the TLV-TWA should be used as a guide in the control of health hazards and should not be used to indicate a fine line between safe and dangerous exposures.

<b>Product Name</b>	BT Tungsten Electrodes
<b>Part Number</b>	900301-900303, 900320-900322, 900308, 900310-900313, 900330-900332, 900341-900343, 900350
<b>SDS Document Number</b>	SDS_BT_Tungsten_Electrodes_V1.2_201223
<b>Issue Date</b>	20/12/23






## 8.2 Appropriate engineering controls

**Ventilation:** Use enough ventilation, local exhaust at the arc, or both, to keep the fumes and gases below the exposure limits in the worker's breathing zone, and the general area. Keep exposure as low as possible.

Determine the composition and quantity of fumes and gases to which workers are exposed by taking an air sample from inside the welder's helmet if worn or in the worker's breathing zone. Improve ventilation if exposures are not below limits.

*Note: See WTI Technical Note 7 – Health and Safety in Welding for further information / guidance.*

## 8.3 Personal protective equipment (PPE)

<b>Eye Protection</b>		Wear safety glasses with side shields or chemical goggles. Soft contact lenses may absorb and concentrate irritants. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. Provide protective screens and flash goggles, if necessary, to shield others.
<b>Hand protection:</b>		Wear protective gloves. Suitable gloves can be recommended by the glove supplier.
<b>Protective Clothing</b>		Wear hand, head, and body protection that will help to prevent injury from using this product. At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing. Wear dry gloves free of holes or split seams.
<b>Respiratory protection:</b>		Keep your head out of fumes. Use enough ventilation and local exhaust to keep fumes and gases from your breathing zone and the general area. Use respirable fume respirator, or air-supplied respirator when welding in confined space or where local exhaust or ventilation does not keep exposure below exposure limits.
<b>Hygiene measures:</b>		Do not eat, drink or smoke when using the product. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

*Note: See WTI Technical Note 7 – Health and Safety in Welding for further information / guidance.*

<b>Product Name</b>	BT Tungsten Electrodes
<b>Part Number</b>	900301-900303, 900320-900322, 900308, 900310-900313, 900330-900332, 900341-900343, 900350
<b>SDS Document Number</b>	SDS_BT_Tungsten_Electrodes_V1.2_201223
<b>Issue Date</b>	20/12/23

## 9 Physical and chemical properties

	Property	Product description
9.1	Appearance	Silver-grey
9.2	Odour	Odourless
9.3	Odour threshold	No further relevant information available
9.4	pH	No further relevant information available
9.5	Melting point/freezing point	Approx. 3400 °C. Freezing point not available.
9.6	Boiling point and boiling range	Approx. 5900 °C.
9.7	Flash point	Not applicable
9.8	Evaporation rate	Not applicable
9.9	Flammability	No further relevant information available
9.10	Upper/lower flammability or explosive limits	Not applicable
9.11	Vapour pressure	Not applicable
9.12	Vapour density	Not applicable
9.13	Relative density	No further relevant information available
9.14	Solubility(ies)	Insoluble
9.15	Partition coefficient: (n-octanol/water)	No further relevant information available
9.16	Auto-ignition temperature	No further relevant information available
9.17	Decomposition temperature	No further relevant information available
9.18	Viscosity	Not applicable
9.19	Specific heat value	No further relevant information available
9.20	Particle size	No further relevant information available
9.21	Volatile organic compounds content	No further relevant information available
9.22	% volatile	No further relevant information available
9.23	Saturated vapour concentration	No further relevant information available
9.24	Release of invisible flammable vapours and gases	No further relevant information available
	<b>Additional parameters</b>	
9.25	Shape and aspect ratio	No further relevant information available
9.26	Crystallinity	No further relevant information available
9.27	Dustiness	No further relevant information available
9.28	Surface area	No further relevant information available
9.29	Degree of aggregation or agglomeration	No further relevant information available
9.30	Ionisation (redox potential)	No further relevant information available
9.31	Biodurability or biopersistence	No further relevant information available

## 10 Stability and Reactivity

### 10.1 Reactivity

The product is non-reactive under normal conditions of storage and transport.

### 10.2 Chemical stability

Stable under normal conditions of storage and transport.

### 10.3 Conditions to avoid

Avoid heat or contamination of acids, alkalis and oxidising agents.

### 10.4 Incompatible materials and possible hazardous reactions

Contact with acids, alkalis and oxidising agents could cause reaction and generation of gas.

<b>Product Name</b>	BT Tungsten Electrodes
<b>Part Number</b>	900301-900303, 900320-900322, 900308, 900310-900313, 900330-900332, 900341-900343, 900350
<b>SDS Document Number</b>	SDS_BT_Tungsten_Electrodes_V1.2_201223
<b>Issue Date</b>	20/12/23

### 10.5 Hazardous decomposition products

Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedure and welding consumables used. Other conditions that also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coating on the metal being welded (i.e. paint, painting, galvanizing), the number of welders, the volume of the work area, the quality and the amount of ventilation, the position of the welders head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapours from the cleaning and de-greasing activities).

When an electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section 3. Fume and gas decomposition, and not the ingredients in the electrode, are important. The concentration of a given fume or gas component may decrease or increase by many times the original concentration. Also, new compounds not in the electrodes may form. Decomposition products of normal operation include those originating from the volatilization, reaction or oxidation of the materials shown in Section 3, plus those from the base metal coating, etc., as noted above. Reasonable expected fume constituents of this product would include: Complex oxides of iron, manganese, silicon, chromium, nickel, columbium, molybdenum, copper, carbon dioxide, carbon monoxide, ozone and nitrogen Oxides. Some products will also contain antimony, barium, molybdenum, aluminium, columbium, magnesium, strontium, tungsten, and or zirconium. Fume limit for chromium, nickel and or manganese may be reached before limit of 5 mg/m<sup>3</sup> of general welding fumes is reached. Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc. Determine the composition and quantity of fumes and gases to which workers are exposed by taking an air sample from inside the welder's helmet if worn or in the worker's breathing zone. Improve ventilation if exposures are not below limits.

*Note: For further information refer to WTIA Technical Note No. 7 Health and Safety in Welding.*

## 11 Toxicological information

Acute Toxicity: Harmful if swallowed

Skin corrosion/irritation: Not classified

Serious eye damage/irritation: Not classified

Respiratory or skin sensitization: Not classified

Germ cell mutagenicity: Not classified

Carcinogenicity: May cause cancer

Reproductive toxicity: Not classified

Specific target organ toxicity (single exposure): May caused drowsiness or dizziness. May cause respiratory irritation.

Specific target organ toxicity (repeated exposure): Causes damage to organs through prolonged or repeated exposure.

Aspiration hazard: Not classified

Inhalation of welding fumes and gases can be dangerous to your health. The composition and quantity of both are dependent upon the material being worked, the process, procedures, and consumables used. Note: Refer to Section 10 for further information.

### 11.1 Information on routes of exposure

**Inhaled:** Inhalation of dusts, generated by the material, during the course of normal handling, may be harmful. The inhalation of small particles of metal oxide results in sudden thirst, a sweet, metallic foul taste, throat irritation, cough, dry mucous membranes, tiredness and general unwellness. Headache, nausea and vomiting, fever or chills, restlessness, sweating, diarrhoea, excessive urination and prostration may also occur.

**Ingestion:** Not normally a hazard due to physical form of product. Considered an unlikely route of entry in commercial/industrial environments

**Skin Contact:** Skin contact does not normally present a hazard, though individuals may be found who react to substances usually regarded as inert. Molten material is capable of causing burns.

**Eye:** Fumes from welding/brazing operations may be irritating to the eyes.

**Chronic:** Principal routes of exposure include accidental contact with the molten metal and inhalation of fume arising as a consequence of the action of the flame on the rod / wire. Although fume generation rates are generally low, excessive heating of the material, well above its quoted melting point, may result in over-exposure.

**Carcinogenicity:** Welding fumes is on the IARC lists as carcinogenic to humans (Group 1).

<b>Product Name</b>	BT Tungsten Electrodes
<b>Part Number</b>	900301-900303, 900320-900322, 900308, 900310-900313, 900330-900332, 900341-900343, 900350
<b>SDS Document Number</b>	SDS_BT_Tungsten_Electrodes_V1.2_201223
<b>Issue Date</b>	20/12/23

**11.2 Symptoms related to exposure**

*Note: See Section 11.1*

**11.3 Numerical measures of toxicity**

No further information available

**11.4 Immediate, delayed and chronic health effects from exposure**

*Note: See Section 11.1*

**11.5 Exposure Levels**

*Note: See Section 11.1*

**11.6 Interactive effects**

*Note: See Section 11.1*

**11.7 Data limitations**

No further information available.

**12 Ecological information**

Welding consumables and materials could degrade / weather into components originating from the consumables or from the materials used in the welding process. Avoid exposure to conditions that could lead to accumulation in soils or groundwater.

**12.1 Ecotoxicity**

Very toxic to aquatic life.

**12.2 Persistence and degradability**

No further relevant information available.

**12.3 Bioaccumulative potential**

No further relevant information available.

**12.4 Mobility in soil**

No further relevant information available.

**12.5 Other adverse effects**

No further information available.

**13 Disposal considerations**

**13.1 Safe handling and disposal methods**

The generation of waste should be avoided or minimised whenever possible. When practical, recycle in an environmentally acceptable, regulatory compliant manner.

**13.2 Disposal of any contaminated packaging**

Dispose of non-recyclable products in accordance with all applicable National, State, and Local requirements.

**13.3 Environmental regulations**

Discharge, treatment, or disposal may be subject to National, State, or Local requirements.



<b>Product Name</b>	BT Tungsten Electrodes
<b>Part Number</b>	900301-900303, 900320-900322, 900308, 900310-900313, 900330-900332, 900341-900343, 900350
<b>SDS Document Number</b>	SDS_BT_Tungsten_Electrodes_V1.2_201223
<b>Issue Date</b>	20/12/23

## **14 Transport information**

No international regulations or restrictions are applicable.

### **14.1 UN number**

No further relevant information available

### **14.2 Proper shipping name**

No further relevant information available

### **14.3 Transport hazard class(es)**

No further relevant information available

### **14.4 Packing group**

No further relevant information available

### **14.5 Environmental hazards**



### **14.6 Special precautions during transport**

No further relevant information available

### **14.7 Hazchem Code**

Hazchem code not relevant to this product

## **15 Regulatory information**

### **15.1 Safety, health and environmental regulations specific for the product in question**

Regulations of each country are applied to substances / mixtures.

### **15.2 Poisons Schedule number**

A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

## **16 Other information**

Training advice: Ensure that user is aware of the potential hazards and knows what to do in the event of an accident or an emergency.

### **16.1 Date of preparation or review**

15<sup>th</sup> December, 2023

### **16.2 Key abbreviations or acronyms used**

BEI - Biological Exposure Indices

GHS - Globally Harmonized System of classification and labelling of chemicals.

IARC - International Agency for Research on Cancer

<b>Product Name</b>	BT Tungsten Electrodes
<b>Part Number</b>	900301-900303, 900320-900322, 900308, 900310-900313, 900330-900332, 900341-900343, 900350
<b>SDS Document Number</b>	SDS_BT_Tungsten_Electrodes_V1.2_201223
<b>Issue Date</b>	20/12/23

NTP - National Toxicology Program

PPE - Personal Protection Equipment

SUSMP - Standard for the Uniform Scheduling of Medicines and Poisons

TLVs - Threshold Limit Value

WTIA – Welding Technology Institute of Australia

Dynaweld Industrial Supplies Pty Ltd requires that all customers read this safety data sheet carefully so as to be informed about the risks implied in the use of the product, and provide any person involved with a copy of the same and/or adequate training on the use of the product.

Whilst Dynaweld Industrial Supplies Pty Ltd has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, Dynaweld Industrial Supplies accepts no liability for loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in the SDS,

**END OF SAFETY DATA SHEET**