1.

Tungsten Electrodes
SAFETY DATA SHEET

SDS 1202, REV March 2016

1.1 Product Name: Tungsten Electrodes
Product Identification: EWTh-2 (2% Thoriated)
AWS A5.12

Product Specification:

1.2 Relevant identified uses of the substance or mixture and uses advised against:

1.2.1 Relevant identified uses:For welding consumables and related products.

1.2.2 Uses advised: Reference the [7. Handling and storage]

1.3 Details of the supplier of the safety data sheet:

Supplier:
Welding Material Sales
1340 Reed Road
Geneva, IL 60134

Emergency telephone number: 800-424-9300
email: info@weldingmaterialsales.com

2.1 Classification of the mixture:

The product is placed on the market in solid form

2.1.1 *Classification in accordance with* GHS-US

STOT RE 1	H315
STOT SE 1	H335
STOT RE 1	H372
Aquatic Acute 1	H410
Aquatic Acute 1	H400

2.2 Label elements:
GHS-US labeling

Hazard Pictograms (GHS-US):

GHS07 GHS08 GHS09

Signal word (GHS-US):Danger
Hazard statements (GH5-US):
H317May cause an allergic skin reaction
H319Causes eye irritation
H334May cause allergy or asthma symptoms or breathing difficulties if inhaled
H340Suspected of causing genetic defects
H351Suspected of causing cancer
H370Causes damage to organs (kidneys, respiratory system)
H372Causes damage to organs through prolonged or repeated exposure
H400Very toxic to aquatic life
H410Very toxic to aquatic life with long lasting effects
Precautionary statements:
P201Obtain special instructions before use
P202Do not handle until all safety precautions have been read and understood
P260Do not breathe dust/fume/gas/mist/vapors/spray
P261Avoid breathing dust/fume/gas/mist/vapors/spray
P264Wash 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 into the environment
P280	Wear protective gloves
P284	In case of inadequate ventilation wear respiratory protection
P308+313	IF exposed: Call a POISON CENTER or doctor/physician
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing. If eye irritation persists seek medical advice/attention.

P342+P311	IF experiencing respiratory symptoms: Call a POISON CENTER and / 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.
P402+P404	Store in a dry place. Store in a closed container

For thoriated tungsten electrodes, store in tightly closed containers in a cool and well-ventilated area. Nobody should remain permanently or longer than necessary in close proximity to the stored thoriated tungsten electrodes as the electrodes may emit alpha, beta and gamma radiation. Additional measures should be taken to protect from such possible alpha, beta and gamma radiation. Thoriated tungsten electrodes may be incompatible with some strong acids.

P501Dispose of contents and container in accordance with local regional/national international regulations.

2.3 Other hazards: No additional information available

2.4 Unknown acute toxicity (GHS-US): No data available.

3.1 Substances: No data available

Full text of H-phrases: see section 16

3.2 Mixtures: The mixture contains dangerous substances:

SUBSTANCE NAME		CAS NO	% PERCENT	GHS-US CLASS
Thorium Dioxide	ThO_2	1314-20-1	1.80 - 2.20	Carc. 1A, H350

4.1 Description of first aid measures:

First-aid measures after inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen and get medical attention.

First-aid measures after skin contact: Flush with water for at least 15 minutes. Seek medical attention if irritation develops or persists.

First-aid measures after eye contact: Immediately flush eyes with water and continue washing for at least 15 minutes. Obtain medical attention if discomfort persists.

First-aid measures after ingestion: Do NOT induce vomiting. Get immediate medical attention.

4.2 Most important symptoms and effects, both acute and delayed:

Symptoms/injuries after inhalation: Short-term (acute) overexposure to the gases, fumes, and dusts may include irritation of the eyes, lungs, nose, and throat. Some toxic gases associated with welding may cause pulmonary edema, asphyxiation, and death. Acute overexposure may include signs and symptoms such as watery eyes, nose and throat irritation, headache, dizziness, difficulty in breathing, frequent coughing, or chest pain. The presence of chromium/chromate in fume can cause irritation of nasal membranes and skin. The presence of nickel compounds in fume can cause metallic taste, nausea, tightness of chest, fever, and allergic reaction. Excessive inhalation or ingestion of manganese can produce manganese poisoning. Overexposure to manganese compounds may affect the central nervous system, symptoms of which are languor, sleepiness, muscular weakness, emotional disturbances, and spastic gait resembling Parkinsonism. These symptoms can become progressive and permanent if not treated. Excessive inhalation of fumes may cause "Metal Fume Fever" with Flu-like symptoms such as chills, fever, body aches, vomiting, sweating, etc.

Symptoms/injuries after skin contact:	Dusts may cause irritation.
Symptoms/injuries after eye contact:	Causes eye irritation.
Symptoms/injuries after ingestion:	Not an anticipated route of exposure during normal product handling. May be harmful if ingested.

4.3 Indication of any immediate medical attention and special treatment needed: No data available.

5.1 Extinguishing media:
Suitable extinguishing media: Use extinguishing media appropriate for surrounding fire.

Unsuitable extinguishing media: No data available.

5.2 Special hazards arising from the substance or mixture: Fire may produce irritating or poisonous gases.
Fire hazard :Not flammable
Explosion hazard: None known

5.3 Advice for firefighters: In the event of fire, wear self-contained breathing apparatus and full protective gear.

6.1 Personal precautions, protective equipment and emergency procedures:
For non-emergency personnel: Wear appropriate personal protective equipment as specified in Section 8. Ensure adequate ventilation.
For emergency responders: No data available.

6.2 Environmental precautions: Avoid release into the environment. Avoid dispersal of spilled material and contact with soil, ground and surface water drains and sewers.

6.3 Methods and material for containment and cleaning up: Take up mechanically. Collect the material in labeled containers and dispose of according to local and regional authority requirements.

6.4 Reference to other sections: See Section 7 for information of safe handling. See Section 8 for information on personal protection equipment. See Section 13 for disposal information.

7.1 Precautions and 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. End the end of the work shift, hands, 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. Any dusts generated during these operations may be considered "Source Material" as defined by the Nuclear Regulatory Commission and therefore be subject to the requirements of 10 CFR, Parts 20 and 40. Routine wet mopping or vacuuming with an explosion proof vacuum fitted with a HEPA filter, may be considered to reduce accumulation of dusts.

7.2 Conditions for safe storage, including and incompatibilities: Store in cool, dry and well-ventilated place. Keep away from incompatible materials. Keep away from heat and open flame.

7.3 Specific end use(s): For welding consumables and related products.

8.1 Control parameters: Exposure limits were not established for this product

USA ACGIH	ACGIH (TWA) (mg/m3)	5 mg/m3
USA OSHA	OSHA PEL (TWA) (mg/m3)	5 mg/m3
USA ACGIH	ACGIH (TWA) (mg/m3)	
USA OSHA	OSHA PEL (TWA) (mg/m3)	No data
		No data
USA ACGIH	ACGIH (TWA) (mg/m3)	
USA OSHA	OSHA PEL (Ceiling) (mg/m3)	10 mg/m3
		15 mg/m3
USA ACGIH	ACGIH (TWA) (mg/m3)	
USA OSHA	OSHA PEL (TWA) (mg/m3)	
USA ACGIH	ACGIH (TWA) (mg/m3)	No data
USA OSHA	OSHA PEL (TWA) (mg/m3)	No data
USA ACGIH	ACGIH STEL (mg/m3)	
USA ACGIH	ACGIH (TWA) (mg/m3)	5 mg/m3
USA OSHA	OSHA PEL (TWA) (mg/m3)	5 mg/m3
		10 mg/m3
		1 mg/m3
		1 mg/m3

8.2 Exposure controls:

Read and understand the manufacturer's instructions and precautionary label on this product. See American Standard Z49.1 Safety in Welding and Cutting, published by the American Welding Society, 550 N.W. Lejenune Rd. Miami, FL 33126 and OSHA Publication 2206 (29 CFR 1910), U.S. Government Printing Office, Washington, D.C. 20402 for more details on the following topics.

Appropriate engineering controls: local exhaust and general ventilation must be adequate to meet exposure standards.

Hand protection: Wear welding gloves.

Eye protection: Wear helmet or face shield with filter lens of appropriate shade number. See ANSI/ASC Z49.1 Section 4.2. Provide protective screens and flash goggles, if necessary, to shield others.

Skin and body protection: Wear head and body protection, which help to prevent injury from radiation, sparks, flame and electrical shock. See ANSI Z49.1. 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. Train the employee not to touch live electrical parts and to insulate him/herself from work and ground. Welders should not wear short sleeve shirts or short pants.

Respiratory protection: If exposure limits are exceeded or irritation is experienced, NIOSH approved respiratory protection should be worn.

9.1 Information on basic physical and chemical properties:

Physical state:	- Solid
Appearances:	- Rods
Color:	- Gray - Silver
Odor:	- No data available
Odor threshold:	- No data available
pH:	- No data available
Relative evaporation rate (butyl acetate = l):	- No data available
Melting point:	- 3400°C
Freezing point:	- No data available
Initial boiling point and boiling range:	- No data available
Flash point:	- No data available
Self ignition temperature:	- No data available
Decomposition temperature:	- No data available
Flammability (solid, gas):	- No data available
Vapor pressure:	-No data available
Relative vapor density at 20° C:	- No data available
Relative density:	- No data available
Solubility(ies)	- No data available
Log Pow:	- No data available
Log Kow:	- No data available
Viscosity, kinematic:	- No data available
Viscosity, dynamic:	- No data available
Explosive properties:	- No data available
Oxidizing properties:	- No data available
Explosive limits:	- No data available

9.2 Other information: No additional information available.

10.1 Reactivity: No additional information available.
10.2 Chemical stability: The product is stable under normal conditions. When using it may produce dangerous dusts, fumes and gases.
10.3 Possibility of hazardous reactions: Will not occur.

10.4 Conditions to avoid: None

10.5 Incompatible materials: None

10.6 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 which 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 vapors from the cleaning and degreasing 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, aluminum, columbium, magnesium, strontium, tungsten, and or zirconium. Fume limit for chromium, nickel and or manganese may be reached before limit of 5 mg/m3 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. See ANSI/AWS F1.1, F1.3 and F1.5, available from the American Welding Society, 550 N.W. Lejeune Road, Miami, FL 33126

11.1 Information on toxicological effects:

Acute toxicity: Harmful if swallowed

Thorium Dioxide	1314-20-1	No data

Yttrium Oxide 1314-36-9

Skin corrosion/irritation:

Serious eye damage/irritation:

Respiratory or skin sensitization:

Germ cell mutagenicity:

Carcinogenicity:

Reproductive toxicity:

12.1 Toxicity:

Ecology - general: Very toxic to aquatic life.

12.2 Persistence and degradability: No additional information available.
12.3 Bio accumulative potential: No additional information available.
12.4 Mobility in soil: No additional information available.
12.5 Other adverse effects: No additional information available.

13.1 Waste treatment methods: Dispose of in accordance with local and national regulations.
Waste disposal recommendations: Dispose of contents/container in accordance with local/regional/national/international regulations.

In accordance with DOT / ADR / RID / ADNR / IMDG / ICAO / IATA
14.1UN Number: Not a dangerous good in sense of transport regulations
14.2UN proper shipping name: Not applicable

15.1 US Federal Regulations:

Listed on the United States TSCA (Toxic Substances Control Act) Inventory
Listed on SARA Section 313 (Specific toxic chemical listings)

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15.2 US State Regulations:

U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. California -Proposition 65 -Reproductive Toxicity - Female	U.S. California - Proposition 65 - Reproductive Toxicity - Male	No Significance risk level (NSRL)
Yes				

U.S. - Massachusetts - Right To Know List
U.S. - Minnesota - Hazardous Substance List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List

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Tungsten Electrodes SAFETY DATA SHEET

Full text of H-phrases:

Acute Tox. 2 (Inhalation)	Acute toxicity (inhal.), Category 2
Acute Tox. 3 (Oral)	Acute toxicity (oral), Category 3
Acute Tox. 4 (Oral)	Acute toxicity (oral), Category 4
Aquatic Acute 1	Hazardous to the aquatic environment - Acute Hazard, Category 1
Carc. 1A	Carcinogenicity, Category 1A
Eye Irrit. 2A	Serious eye damage/eye irritation Category 2A
Skin Irrit. 2A	Sensitivity - Skin corrosion/irritation, Category 2
Skin Sens. 1	Sensitivity - Skin, Category 1
STOT RE 1	Specific target organ toxicity - Repeated exposure, Category 1
STOT SE 3	Specific target organ toxicity - Single exposure, Category 3, Narcosis
STOT SE 3	Specific target organ toxicity - Single exposure, Category 3, Respiratory tract irritation
H301	Toxic if swallowed
H302	Harmful if swallowed
H315	Causes skin irritation
H317	May cause an allergic skin reaction
H319	Causes serious eye irritation
H330	Fatal if inhaled
H335	May cause respiratory irritation
H336	May cause drowsiness or dizziness
H350	May cause cancer
H372	Causes damage to organs through prolonged or repeated exposure
H400	Very toxic to aquatic life

NFPA health hazard:	2 – Warning may be harmful if inhaled or adsorbed
NFPA fire hazard:	0 - Materials that will not burn.
NFPA reactivity:	0 - Normally stable, even under fire exposure conditions, and are not reactive with water.

HMIS III Rating

Health:	3 - Major Hazard – major injury likely unless prompt action is taken and medical treatment given.
Flammability:	0 - Minimal Hazard
Physical:	0 - Minimal Hazard

15.2 US State Regulations:

We believe that the information contained herein is believed to be true and accurate as of the date of this SOS. All statements or suggestions are made without any warranty, expressed or implied, regarding the accuracy of the information, the hazard connected with the use of this material or the results to be obtained for use thereof. As the condition or methods of use are beyond our control, we do not assume any responsibility and expressly disclaim any liability for any use of this material. It is the user's obligation to determine the conditions of safe use of these products.
All chemical products can in fact present unknown risks to health, safety and / or the environment, even in relation to the different operating conditions, and they must therefore be used with care. For this reason we cannot guarantee that the risk described in this form are the only foreseeable risks. The user must therefore satisfy himself as to the particular conditions under which it is intended to be use in. Moreover, it must be noted that the user is obliged to comply with all the legislative, administrative and regulatory provisions regarding the product and its use in terms of occupational hygiene and safety, and environmental protection, apart from the information given in the form, given purely as guidance.
Technical Department