

Material Safety Data Sheet

Radnor Tungsten 1% Zirconium welding electrode (EWZr-1)

1. Product and company identification

Product name	: Tungsten 1% Zirconium welding electrode (EWZr-1)
Trade name	: Tungsten 1% Zirconium welding electrode (EWZr-1)
Material uses	: Welding and cutting of metals.
Supplier	: Radnor Products, PO Box 6675, Radnor, PA 19087
In case of emergency	: (886) 734-3438
Product type	: Solid.

2. Hazards identification

Emergency overview

Color	: Gray.
Physical state	: Solid.
Odor	: Odorless.
Signal word	: WARNING!
Hazard statements	: CAUSES EYE AND SKIN IRRITATION. CONTAINS MATERIAL THAT CAN CAUSE TARGET ORGAN DAMAGE.
Precautions	: Avoid contact with eyes, skin and clothing. 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	: Irritating to skin.
Eyes	: Dust particules or fumes may cause eye irritation.

Potential chronic health effects

Chronic effects	: Contains material that can cause target organ damage.
Carcinogenicity	: No known significant effects or critical hazards.
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.

Over-exposure signs/symptoms

Inhalation	: No specific data.
Ingestion	: No specific data.

2. Hazards identification

- Skin** : Adverse symptoms may include the following:
irritation
redness
- Eyes** : Adverse symptoms may include the following:
pain or irritation
watering
redness
- 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	99
Zirconium dioxide	1314-23-4	<1

Canada

Name	CAS number	%
Tungsten	7440-33-7	99
Zirconium dioxide	1314-23-4	<1

Mexico

Name	CAS number	UN number	%	IDLH	Classification			
					H	F	R	Special
Tungsten	7440-33-7	Not regulated.	99	-	1	1	0	
Zirconium dioxide	1314-23-4	Not regulated.	<1	50 mg/m ³	0	0	0	

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.
- 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.

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

5. Fire-fighting measures

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 : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink.

8. Exposure controls/personal protection

United States

Ingredient	Exposure limits
Tungsten	NIOSH REL (United States, 12/2001). STEL: 10 mg/m ³ 15 minute(s). TWA: 5 mg/m ³ 10 hour(s).
Zirconium dioxide	ACGIH TLV (United States, 1/2007). STEL: 10 mg/m ³ , (as Zr) 15 minute(s). TWA: 5 mg/m ³ , (as Zr) 8 hour(s). NIOSH REL (United States, 12/2001). STEL: 10 mg/m ³ , (as Zr) 15 minute(s). TWA: 5 mg/m ³ , (as Zr) 10 hour(s). OSHA PEL (United States, 11/2006). TWA: 5 mg/m ³ , (as Zr) 8 hour(s).
Welding fumes	ACGIH TLV (United States). TWA: 5 mg/m ³ 8 hour(s). Form: Particulate.

Canada

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			Notations
Ingredient	List name	ppm	mg/m ³	Other	ppm	mg/m ³	Other	ppm	mg/m ³	Other	
Tungsten, as W	AB 6/2008	-	5	-	-	10	-	-	-	-	[A]
Tungsten	BC 6/2008	-	5	-	-	10	-	-	-	-	
Zirconium dioxide, as Zr	US ACGIH 1/2008	-	5	-	-	10	-	-	-	-	[B]
	AB 6/2008	-	5	-	-	10	-	-	-	-	[B]
	BC 6/2008	-	5	-	-	10	-	-	-	-	[B]
Zirconium dioxide, as zirconium	ON 6/2008	-	5	-	-	10	-	-	-	-	[C]
Zirconium dioxide, as Zr	QC 6/2008	-	5	-	-	10	-	-	-	-	[B]

Notes: [A]as W [B]as Zr [C]zirconium

8. Exposure controls/personal protection

Mexico

Ingredient	Exposure limits
Tungsten	NOM-010-STPS (Mexico, 9/2000). LMPE-CT: 10 mg/m ³ , (as W) 15 minute(s). LMPE-PPT: 5 mg/m ³ , (as W) 8 hour(s).
Zirconium dioxide	NOM-010-STPS (Mexico, 9/2000). LMPE-CT: 10 mg/m ³ , (as Zi) 15 minute(s). LMPE-PPT: 5 mg/m ³ , (as Zi) 8 hour(s).
Welding fumes	ACGIH TLV (United States). TWA: 5 mg/m ³ 8 hour(s). Form: Particulate.

Consult local authorities for acceptable exposure limits.

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. Recommended: 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. Recommended: 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. Recommended: 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.
- Melting/freezing point** : <3400°C (<6152°F)
- Relative density** : 18.2 to 18.97
- Solubility** : Insoluble in the following materials: cold water and hot water.

10. Stability and reactivity

- Chemical stability** : The product is stable.
- Conditions to avoid** : No specific data.
- 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.

10. Stability and reactivity

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. Toxicological information

Acute toxicity : No specific data.

Chronic toxicity

Carcinogenicity

Classification

Product/ingredient name

Zirconium dioxide

ACGIH

A4

IARC

-

EPA

-

NIOSH

-

NTP

-

OSHA

-

12. Ecological information

Environmental effects : Not established

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

DOT/TDG/MXT/IMDG/IATA : Not regulated.

15. Regulatory information

United States

HCS Classification

: Irritating material
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

SARA 311/312 MSDS distribution - chemical inventory - hazard identification:

Tungsten: Immediate (acute) health hazard, 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.

15 . Regulatory information

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

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.
- Massachusetts Substances:** The following components are listed:
Tungsten;Zirconium dioxide
- 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
- 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
- Rhode Island Hazardous Substances:** None of the components are listed.

California Prop. 65

California prop. 65: No products were found.

Canada

WHMIS (Canada) : Class D-2B: Material causing other toxic effects (Toxic).

Canadian lists :

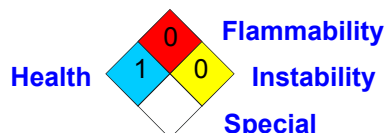
- CEPA Toxic substances:** None of the components are listed.
- Canadian ARET:** None of the components are listed.
- Canadian NPRI:** None of the components are listed.
- Alberta Designated Substances:** None of the components are listed.
- Ontario Designated Substances:** None of the components are 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

15 . Regulatory information

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

16 . Other information

United States

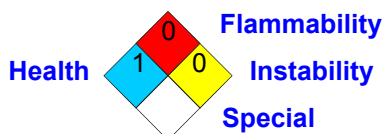
- Label requirements** : CAUSES EYE AND SKIN IRRITATION. CONTAINS MATERIAL THAT CAN CAUSE TARGET ORGAN DAMAGE.
- Hazardous Material Information System (U.S.A.)** :

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.)** :



Canada

- WHMIS (Canada)** : 

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Version : 2

16 . Other information

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.