Weldtool technologies inc
WWW.WELDTOOL.COM

MATERIAL SAFETY DATA SHEET (SDS)

For Welding Consumables and Related Products
Conforms to OSHA Hazard Communication Standard 29CFR 1910.1200
Standard Must Be Consulted for Specific Requirements

SECTION I – IDENTIFICATION

Manufacturer/Supplier: Weldtool Technologies Inc.
Emergency No: CHEMTREC (866)-936-3354

Trade Name: Titanium Weld Wire

Classification: AWS A5.16 – "Revision Level" ERTi-1, ERTi-2, ERTi-3, ERTi-4, ERTi-5 (6AL/4V), ERTi-23 ERTi-9 (6AL/4V ELI) ERTi-7, ERTi-12

SECTION II - HAZARDOUS MATERIALS*

IMPORTANT: this section covers the materials from which the product is manufactured. The fumes and gases produced during welding with the normal use of this product are covered under Section V.

*The term "HAZARDOUS MATERIALS" should be interpreted as a term required and defined in OSHA HAZARD COMMUNICATION STANDARD 29 CFR 1910.1200 however the use of this term does not necessarily imply the existence of any hazard.

Ingredients	**CAS No.**	**% Weight**	**Exposure Limit (mg/m3)**		**NTP listed**	**IARC listed**
			OSHA PEL	**ACGIH TLV**		
Aluminum	7429-90-5	0 – 8	None	5 (as welding fumes)	No	No
Chromium	7440-47-3	0 – 11	0.5(soluble compounds)	0.5	Yes	Yes
Chromium(Cr+6)			0.1	0.05	Yes	Yes
Columbium (Niobium)	7440-03-1	0 – 2	None	None	No	No
Iron	7439-89-6	0 – 2	10 (as Fe_2O_3 fume)	5	No	No
Molybdenum	7439-98-7	0 – 11.5	5 (soluble compounds)	5 (soluble compounds)	No	No
Nickel	7440-02-0	0 - 0.9	1.0 0.	1 (soluble Ni compounds)	No	Yes
Tatalum	7440-25-7	0 – 1	5	10	No	No
Tin	7440-31-5	0 - 4.5	2	2	No	No
Titanium	7440-32-6	73 – 99	None	10 (as TiO_2)	No	No
Vanadium	7440-62-2	0 – 13	0.5 (dust), 0.1 (fume)	0.05 (as V_3O_5)	No	No
Zirconium	7440-67-7	0 – 6	5	5	No	No

EXPOSURE LIMITS: OSHA nuisance dust standards apply to components shown as "None".

SECTION III - PHYSICAL DATA

Boiling Point (?F): 5930
Melting Point (?F): 3050
Specific Gravity (H_2O=1): 4.5
Solubility in Water: Insoluble
Appearance and Odor: Odorless gray metallic solid.
Available in ingots, mill products, castings, sponge, chips, briquettes and other irregular shapes.

SECTION IV – FIRE AND EXPLOSION HAZARD DATA

Non-Flammable: Welding arc and sparks can ignite combustibles. See Z-49.1 referenced in Section VI.

Auto-Ignition Temperature (?F): 2200 ?F for metal in air, 480 ?F for powder in air**.**

Extinguishing Media: Dry table salt or Type D fire extinguisher.

Special Fire-Fighting Instructions: Remove uninvolved material; allow fire to burn out. Fire can be controlled by covering with dry salt or powder from Type D extinguisher. Carbon Dioxide is not effective.

Unusual Fire and Explosive Hazards: Dry titanium burns slowly while releasing much heat. Water applied to burning titanium may cause an explosion. Piled chips may burn vigorously.

SECTION V – REACTIVITY DATA

Hazardous Decomposition Products

Welding fumes and gases cannot be classified simply. The composition and quantity of these fumes and gases are dependent upon the metal being welded, the procedures followed and the electrodes used.

Workers should be aware that the composition and quantity of fumes and gases to which they may be exposed, are influenced by: coatings which may be present on the metal being welded (such as paint, plating, or galvanizing), the number of welders in operation and the volume of the work area, the quality and amount of ventilation, the position of the welder's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing procedure). When the electrode is consumed, the fumes and gas decomposition products generated are different in percent and form from the ingredients listed in Section II. The composition of these fumes and gases are the concerning matter and not the composition of the electrode itself. Decomposition products include those originating from the volatilization, reaction, or oxidation of the ingredients shown in Section II, plus those from the base metal, coating and the other factors noted above.

Stability (Conditions to Avoid): Stable, avoid open flame and heat. Incomparability (Materials to Avoid): Strong Oxidizing or reducing agents. Hazardous Polymerization: Will not occur. Welding fume exposure limits are listed in Section II.

Gaseous reaction products may include carbon monoxide and carbon dioxide

Ozone and nitrogen oxides may be formed by the radiation from the arc.

One method of determining the composition and quantity of the fumes and gases to which the workers are exposed is to take an air sample from inside the welder's helmet while worn or within the worker's breathing zone. See ANSI/AWS F1.1 publication available from the American Welding Society 550 N.W. LeJeune Road, Miami, Florida 33126.

SECTION VI– HEALTH HAZARD DATA

Threshold Limit Value: The ACGIH recommended general limit for welding fume NOC (Not otherwise classified) is 5 mg/m_3. ACGIH-1985 preface states: "The TLC-TWA should be used as guides in the control of health hazards and should not be used as fine lines between safe and dangerous concentrations." See section V for specific fume constituents, which may modify this TLV.

Common Entry Is by Inhalation or Through the Eyes and Skin.

Effects of Overexposure: Inhalation of welding fumes and gases can be dangerous to your health. Short-term (acute) overexposure to welding fumes may result in discomfort such as dizziness, nausea, or dryness or irritation of nose, throat, or eyes. Inhalation of extremely high levels of fluorides may cause abdominal pain diarrhea, muscular weakness and convulsions. Continued inhalation could cause loss of consciousness and death. No toxic effects would be expected from its inert solid form under normal usage such as forging and heating. Prolonged, repeated exposure to fumes or dusts generated during cutting, grinding, or welding may cause adverse health effects associated with the following constituents:

Aluminum: Not generally regarded as serious industrial health hazard.

Chromium: The dusts of chromium metal are usually reported to be relatively nontoxic, although there are reports of skin ulcers, usually on hands, or a perforated nasal septum. Some insoluble chromium compounds are suspect carcinogens.

Columbium (Niobium): No reports of human intoxication.

Iron: Siderosis, no fibrosis.

Molybdenum: Irritation to the nose and throat, weight loss, and digestive disturbances in animals. No industrial poisoning has been reported.

Nickel: Respiratory irritation and pneumonitis. Several nickel oxide are suspect lung and nasal carcinogens.

Tantalum: No systemic effects from industrial exposure have been reported in humans.

Tin: Dust of tin oxides has caused a pneumonoconiosis, which is relatively benign.

Titanium: Generally considered to be in the nuisance dust category.

Vanadium: Irritant to the conjunctive and respiratory tract. May lead to pulmonary involvement. Signs and symptoms of poisoning are pallor, greenish-black discoloration of the tongue, cough, conjunctivitis, pain in the chest, bronchitis, rales and rhonchi, bronchospasm, tremor of the fingers and arms, and radiographic reticulation.

Zirconium: Studies of several zirconium compounds conclude that zirconium is an element of low toxicity.

Note: Some fume constituents pose more potential hazards than others, depending upon their inherent toxicity and concentration. Of special concern are chromium, vanadium, nickel, and possible titanium. It is advised that your particular operation be evaluated by a health professional to determine whether or not a hazard exists. Arc Rays can injure eyes and burn skin. Electric shock can kill. See Section VII.

Emergency and First Aid Procedures: Call for medical assistance. Use first aid procedures recommended by the American Red Cross. If breathing is difficult – give oxygen. If not breathing-use CPR (cardiopulmonary resuscitation). Consult a physician if irritation of the eyes and skin or flash burns develops after exposure.
Carcinogenicity : OSHA (29 CFR 1910.1200) lists Nickel and Chromium as a possible carcinogen.

SECTION VII – CONTROL MEASURES AND PRECAUTIONS FOR SAFE HANDLING AND USE

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 Road, Miami, Florida 33126 and OSHA Publication 2206 (29 CFR 1910), U.S.Government Printing Office, Washington D.C. 20402 for more details on the following topics.
Ventilation: Use plenty of ventilation and/or local exhaust at the arc, to keep the fumes and gases below the threshold limit value within the worker's breathing zone and the general work area. Welders should be advised to keep their head out of the fumes.
Respiratory Protection: Use respirable fume respirator or air supplied respirator when welding in a confined space or general work area where local exhaust and/or ventilation does not keep exposure below the threshold limit value.
Eye Protection: Wear a helmet or face shield with a filter lens shade number 12-14 or darker. Shield other workers by providing screens and flash goggles.
Protective Clothing: Wear approved head, hand and body protection, which help to prevent injury from radiation, sparks and electrical shock. See ANSI Z-49.1. This would include wearing welder's gloves and a protective face shield and may include arm protectors, apron, hats, shoulder protection, as well as dark substantial clothing. Welders should be trained not to allow electrically live parts to contract the skin or wet clothing and gloves. The welders should insulate themselves from the work and ground.
Waste Disposal Method: Discard any product, residue, disposal container, or liner in an environmentally acceptable manner approved by Federal, State and Local regulations.

SECTION VIII – LIABILITY DISCLAIMER

Grandis Titanium does not warranty, expressed or implied, with respect to the information contained within this document. Grandis Titanium believes that the information contained in this Material Safety Data Sheet (MSDS) is accurate as of the date listed on this MSDS.