G&S Titanium, Inc.

SAFETY DATA SHEET

Revised 05/19/2015

SECTION 1: COMPANY AND PRODUCT IDENTIFICATION

MANUFACTURER: G&S Titanium, Inc. **Telephone No. (330)263-0564**
Address: 4000 East Lincoln Way, Wooster, Ohio 44691 **Emergency No. 800-424-9300 Chemtrec**

Trade Name: AWS ERTI-1, AWS ERTI-2, AWS ERTI-3, AWS ERTI-4, AWS ERTI-5 (6Al/4V), AWS ERTI-23 (6Al/4VELI), AWS ERTI-7, AWS ERTI-6 (5Al-2.5Sn), AWS ERTI-9 (3Al-2.5V), AWS ERTI-12, AMS, ASTM and Other Ti alloys
Classification: AWS A5.16, Titanium base alloys
Recommended Use: Weld Wire, Bar, Billet

SECTION 2: HAZARD IDENTIFICATION

Aluminum- not generally regarded as serious industrial health hazard
Columbium (Niobium) - no reports of human intoxication
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
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 compounds, including 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 pneumonoconiosis, which is relatively benign.
Titanium - generally considered to be in the nuisance dust category.
Vanadium - irritant to the conjunctivae and respiratory tract. May lead to pulmonary involvement. Signs and symptoms of poisoning are pallor, greenish-blackdiscoloration 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 possibly titanium. It is advised that your particular operation be evaluated by a competent health professional to determine whether or not a hazard exists.

SECTION 3: COMPONENTS/INFORMATION ON INDIGRIDENTS

Ingredients	Approx. %	CAS No.
Aluminum	0-8	7429-90-5
Chromium	0-11	7440-47-3
Chromium (Cr+6)		
Columbium (Niobium)	0-2	7440-03-1
Copper	0-10	7440-50-8
Iron	0-2	7439-89-6
Manganese	0-5	7439-96-5
Molybdenum	0-11.5	7439-98-7
Nickel	0-.09	7440-02-0
Palladium	.01-.25	7440-05-3
Tantalum	0-1	7440-25-7
Tin	0-4.5	7440-31-5
Titanium	73-99	7440-32-6
Vanadium	0-13	7440-62-2
Zirconium	0-6	7440-67-7

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SECTION 4: FIRST AID MEASURES

Skin contact: If irritation develops, remove contaminated clothing, wash skin with soap and water. If irritation persists seek medical attention.
Eye contact: In case of irritation, flush with water for 15 minutes.
Inhalation: If exposed to excessive levels of metal fumes, immediately remove individual from contaminated area to fresh air. Seek medical attention immediately.

SECTION 5: FIRE FIGHTING MEASURES

Non-Flammable: Welding arc and sparks can ignite combustibles.
Auto-Ignition Temperature (F): 2200 degrees for metal in the air, 480 degrees for powder in air.
Extinguishing Media: Dry table salt or Type D fire extinguisher.
Special Fire-Fighting Instructions: Isolate the burning material; allow fire to burn out. Fire can be controlled by covering with dry salt or powder from Type D extinguisher. Wear a reflective heat resistant suit. Unusual Fire and Explosive Hazards: Water applied to burning titanium, chips, or powder may cause an explosion. Carbon Dioxide and Nitrogen are not effective in extinguishing titanium or titanium alloy fires.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Spill or Leak procedures: No special procedure.

SECTION 7: HANDLING AND STORAGE

Handling and Storage: Machining of titanium alloys may result in fine turnings, chips or dust. Any material with a dimension less than .001" is flammable and should be kept away from any source of ignition.

EYE PROTECTION: Use face shield (8" minimum) or goggles when burning, or grinding. When welding, use a hood providing full face coverage for protection from ultraviolet radiation.
VENTILATION: Ventilation, as described in the Industrial Ventilation Manual produced by the American Conference of Governmental Industrial Hygienists, should be used to maintain concentration of air contaminant standards.
RESPIRATORY PROTECTION: A properly-fitted NIOSH-approved, dust fume respirator should be worn during welding or burning, when air contaminant levels exceed OSHA permissible exposure levels (PELs) or ACGIH threshold limit values (TLVs). Respiratory Protection Standard (29 CFR 1910.134) and other applicable regulations.
PROTECTIVE CLOTHING: Use appropriate protective clothing for protection of exposed skin areas from heat, sparks and ultraviolet radiation during forging, grinding, and welding.

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SECTION 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

Ingredients	Approx. %	CAS No.	NTP Listed	IARC Listed	Exposure Limit (mg/m3)	
					OSHA PEL	ACGIH TLV
Aluminum	0-8	7429-90-5	No	No	None	5 (as welding fumes)
Chromium	0-11	7440-47-3	Yes	Yes	0.5 (soluble compounds)	0.5
Chromium (Cr+6)			Yes	Yes	0.1	0.05
Columbium (Niobium)	0-2	7440-03-1	No	No	None	None
Copper	0-10	7440-50-8	No	No	1 (dust, fumes)	1 (dust, fumes)
Iron	0-2	7439-89-6	No	No	10 (as Fe2O3 Fume)	5
Manganese	0-5	7439-96-5	Yes	Yes	5	.2 (inorganic compounds)
Molybdenum	0-11.5	7439-98-7	No	No	5 (soluble compounds)	5 (soluble compounds)
Nickel	0-.09	7440-02-0	No	Yes	1.0	.1 (soluble NI compounds)
Palladium	.01-.25	7440-05-3	No	No	None	None
Tantalum	0-1	7440-25-7	No	No	5	10
Tin	0-4.5	7440-31-5	No	No	2	2
Titanium	73-99	7440-32-6	No	No	None	10 (as TiO_2)
Vanadium	0-13	7440-62-2	No	No	0.5 (dust), 0.1 (fume)	.05 (as V_2O_5)
Zirconium	0-6	7440-67-7	No	No	5	5

Solid form: Special protective clothing not normally needed.
Fumes and Dust: Provide local exhaust ventilation in areas where metal fumes or dusts are produced. Wear NIOSH approved respirator if dust or fume exposure levels are exceeded.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Gray, Odorless, Metallic solid
Boiling Point: 5930F
Melting Point: 3050F
Specific Gravity: 4.4-6.6
Solubility in water: Insoluble

SECTION 10: STABILITY AND REACTIVITY

Stability: Stable
Conditions to avoid: Open flames and excessive heat.
Incompatibility: Avoid strong oxidizing and reducing agents.
Titanium based alloys are rapidly dissolved by Hydrofluoric acid and Nitric-Hydrofluoric acid mixtures. Titanium alloy will ignite in cold fluorine and above 392 F degrees. Titanium will react exothermically with chlorine, bromine, and halo carbons such as carbon tetra chloride, carbon tetra fluoride, and Freon.
Hazardous Decomposition Products:
These alloys will not decompose. However the above reactions with incompatible materials will generate reaction with products such as flammable hydrogen, toxic fumes of nitrogen oxide, or corrosive metal halide vapors.

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SECTION 11: TOXICOLOGY INFORMATION

PRIMARY ROUTES OF ENTRY: Inhalation, skin contact, eye contact.
EFFECTS OF EXPOSURE: No toxic effects would be expected from its inert solid form or 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:
Inhalation of Metal Fumes or Dust: 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.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicicty Effects: None Known
Bioaccumability: This product may have some Bioaccumability
Presistance and digradeability: This product does not biodegrade
Mobility: Not Mobile Inorganic Metal

SECTION 13: DISPOSAL CONSIDERATIONS

Waste disposal: Dispose of in accordance with federal, state, and local regulations.

SECTION 14: TRANSPORTATION INFORMATION

DOT INFORMATION: Not Dangerous
TDG: Not Dangerous
IATA: Not Dangerous
IMDG: Not Dangerous

SECTION 15: REGULATORY INFORMATION

TSCA: In compliance
AIC: In compliance
CEPA DSL: In compliance
JKHLL: In compliance
TCCL: In compliance
Phillippines
TSHNWC : In compliance
CIECS: In compliance
NZIOC
New Zealand: In compliance

SARA 302 Components: No chemical in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA 313 Components: Lead, Nickel, Aluminum, Chromium, Vanadium, Cobalt, Iron, Hydrogen, Copper, Zirconium,

California Prop 65:

Lead and lead compounds	cancer	AB	---	1-Oct-92
Nickel (Metallic)	cancer	LC	7440-02-0	1-Oct-89
Cobalt metal powder	cancer	AB	7440-48-4	1-Jul-92
Chromium (hexavalent compounds)	cancer	LC	---	27-Feb-87
Chromium (hexavalent compounds)	developmental, female, male	SQE	---	19-Dec-08

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SECTION 16: OTHER INFORMATION

None Available.

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