MATERIAL SAFETY DATA SHEET

5/21/2012
Version 1

Retanium™

1. PRODUCT IDENTIFICATION

PRODUCT NAME: Retanium™

Supplier: Reliance Orthodontic Products, Inc.
1540 West Thorndale Ave · Itasca, IL 60143, U.S.A.
Emergency Telephone Phone: 630-773-4009 · Fax: 630-250-7704

Authorized Representative: Emergo Europe, Molenstraatt, 15, 2513 BH The Hague, The Netherlands
Phone: +31-70-345-8570 · Fax: +31-70-346-7299

CE Administrator: Amtac Certification Services Ltd., Davey Avenue, Knowlhill, Milton Keynes, MK5 8NL, United Kingdom

2. INGREDIENTS AND HAZARDS

INGREDIENTS	%	CAS #	OSHA PEL #	ACGIH TLV #
(a) Aluminum (as dust)	0-8	7429-90-5	15	10
(as fume)			5	5
(b) Carbon	0-0.01	1333-86-4	3.5	3.5
(c) Chromium	0-11	7440-47-3	1	0.5
(d) Columbium/Niobium	0-45	7440-03-1	None	None
(e) Copper (as dust)	0-0.2	7440-50-8	1	1
(as fume)			0.1	0.2
(f) Iron (oxide as fume)	0-0.42	1309-37-1	10	5
(g) Molybdenum (total dust)	0-12	7439-98-7	15	10
(soluble compound)			5	
(h) Tantalum(metal and oxide dust)	0-1	7440-25-7	5	5
(i) Tin (inorganic compounds)	0-3	7440-31-5	2	2
(organic compounds)			0.1	
(j) Titanium (total dust)	0-5	13463-67-7	15	10
(k) Vanadium (as dust)	0-5.15	1314-62-1	0.5	0.05
(as fume)			0.1	0.05
(l) Zirconium	0-4	7440-67-7	5	5

Various combinations of the above components may appear in grades supplied. More specific information on a particular grade may be obtained.

3. PHYSICAL DATA

Boiling Point: N/A
Specific Gravity (H20=1): ~4.5-5.5
Vapor Pressure (mm Hg): N/A
Melting Point: 1560-1840 C
Vapor Density (AIR=1): N/A
Evaporation Rate (Butyl Acetate=1): N/A
Solubility in Water: N/A
Appearance and Color: Odorless grey metallic solid.

4. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used):	N/A
Extinguishing Media:	Dry table sale or Type D fire Extinguisher
Special Fire Fighting Procedure:	Remove uninvolved material; allow fire to burn out. Fire can be controlled by covering with dry sale or powder from Type D fire extinguisher.
Unusual Fir and Expolsion Hazard:	Dry titanium burns slowly while releasing much heat. Water applied to burning titanium may cause an explosion. Piled chips may burn vigorously.

5. REACTIVITY DATA

Stable:	Yes.
Conditions to Avoid:	Avoid open flame and heat
Incompatibility:	Strong oxidizing or reducing agents.
Hazardous Decomposition or ByProducts:	Metallic or metal oxide fumes and dust may be produced during welding, grinding or cutting operations. See Section VI for further information

6. HEALTH HAZARD DATA

Inhalation: No toxic affects would be expected from its inert solid form or under normal usage such as forging and heating. Prolonged repeated exposure to fumes or dust generated during cutting, grinding or welding may cause adverse healtch 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.

Iron: siderosis, no fibrosis

Columbium (Niobium): No reports of human intoxication.

Molybdenum: irritation to the nose and throat, weight lost 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: overexposure to dust or fume of tin oxides has caused stannosis which is a relatively benign lung disease.

Titanium: generally considered in the nuisance dusty category, chronic overexposure to titanium dioxide dust can cause chronic bronchitis.

Vanadium: irritant to the conjunctivae 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. Prolonged skin contact with zirconium compounds can cause lumps on the skin (granulomas).

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.

OSH (29 CFR 1910.1200) lists Nickel and Chromium as a possible carcinogen.

Signs and Symptoms of Exposure: Dust inhalation may cause tightness and pain in the chest, coughing and difficulty in breathing. Contact with skin or eyes may cause irritation. Routes of entry: Inhalation, skin contact, eye contact.

Medical Conditions: PEL/TLV exposures should be kept below recommendations by OSH and ACGIH to ensure proper health protection of worker

Emergency and First Aid Procedures: Remove victim from exposure and obtain prompt medical attention. If victim is unconscious, administer oxygen. If not breathing, resuscitate immediately.

7. PRECAUTIONS FOR SAFE HANDLING AND USE

Steps in Case of Spill or Leak: Keep material separated from incompatible materials and sources of ignition.

Disposal: Do not allow metallic dust to accumulate. Metallic dust may preset a serious fire hazard.
Handling and Storage: Titanium and titanium alloy solids are not considered combustible in the form supplied. However, subsequent machining operations require the use of cutting fluids to reduce the temperature of waste material which might ignite without coolant.
Other: This product contains or produces a chemical know to the State of California to cause cancer and birth defects (or other reproductive harm) California Health and Safety Code 25249.5 et seq).

8. CONTROL MEASURES

Ventilation & Respiratory Protection: A properly-fitted NIOSH-approved dust/fume respirator should be worn during welding or burning operations, where air contaminant levels exceed OSHA permissible exposure levels (PELS) or ACGIH threshold limit values (TLV's). Respiratory Protection Standard (29 CFR 1910.134) and other applicable regulations.
Other Protective Equipment: 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.

Work/Hygiene Practices: Use protective gloves when grinding or welding. Use eye protection when cutting, grinding or welding.

9. SUPPLIER NOTIFICATION

This information and data are taken from sources believed to be reliable and correct but cannot be warranted by manufacturer. User is responsible to determine suitability of material for a specific application.