



**MATERIAL SAFETY DATA SHEET**

**WAH CHANG**

**PO BOX 460 - ALBANY, OREGON - 97321**

**SECTION 1. Revised: 2/10/2011 Product Number: 118**

**PRODUCT:** NIOBIUM E.B. FURNACE SLAG

**SYNONYMS:** Columbium E.B. Furnace Slag

**CHEMICAL FAMILY:** Metal and Metallic Oxide Mixture

**HMIS HAZARD RATING:** HEALTH = 1 FIRE = 2 REACTIVITY = 1

HMIS RATING: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe \* = Chronic

**24 HOUR EMERGENCY ASSISTANCE**

WAH CHANG

An Allegheny Technologies Company

541-926-4211

CHEMTREC

800-424-9300

**SECTION 2. HAZARDS IDENTIFICATION**

**ROUTES OF ENTRY**

INHALATION: Yes (dust)

INGESTION: No

SKIN ABSORPTION: No

SKIN/EYE CONTACT: Yes (dust)

**SECTION 3. COMPOSITION, INGREDIENTS INFORMATION**

CHEMICAL COMPONENTS	%	C.A.S. NO.	OR-OSHA/ACGIH EXPOSURE LIMITS	
			mg/m <sup>3</sup> or ppm	
			PEL	TLV
Niobium, Nb	5-65	7440-03-1	10 (PNOR)	10 (PNOS)
Niobium Oxide, Nb <sub>2</sub> O <sub>5</sub>	5-15	1313-96-8	10 (PNOR)	10 (PNOS)
Aluminum, Al	1-15	7429-90-5	10	10
Aluminum Oxide, Al <sub>2</sub> O <sub>3</sub>	1-13	1344-28-1	10 (as Al)	10 (as Al)
Tantalum Oxide, Ta <sub>2</sub> O <sub>5</sub>	0-1	1314-61-0	5 (as Ta)	5 (as Ta)
Hafnium Oxide, HfO <sub>2</sub>	0-5	12055-23-1	0.5 (as Hf)	0.5 (as Hf)
Zirconium Oxide, ZrO <sub>2</sub>	1-10	1314-23-4	5 (as Zr)	10 (Zr STEL)
Titanium Oxide, TiO <sub>2</sub>	0-5	13463-67-7	10	10
Barium Aluminate, BaAl <sub>12</sub> O <sub>19</sub>	0-2	12254-17-9	0.5 (as soluble Ba)	0.5 (as soluble Ba)

PNOR = Particles Not Otherwise Regulated, PNOS = Particles Not Otherwise Specified

N.Ap. = Not Applicable

N.Av. = Not Available

**SECTION 4. FIRST AID MEASURES**

INHALATION: Move into fresh air.

EYE CONTACT: Follow the normal procedure for removal of a foreign object.

SKIN CONTACT: Follow the normal procedure for abrasion or cut.

INGESTION: N.Ap.

**SECTION 5. FIRE FIGHTING MEASURES**

FLASH POINT AND METHODS USED: Not known.

MINIMUM EXPLOSION CONCENTRATION (g/m<sup>3</sup>): Not known.

EXTINGUISHING MEDIA: Dry table salt or Type D fire extinguisher

FIRE FIGHTING PROCEDURES: Isolate burning material, and allow it burn out, while preventing the fire from spreading.

UNUSUAL FIRE AND EXPLOSION HAZARDS: DO NOT SPRAY WATER on burning metal fines, chips, or powder as a violent explosion may result. Upon contact with water, this material generates hydrogen and acetylene gases. Avoid sparks and sources of ignition when opening containers.

**SECTION 6. ACCIDENTAL RELEASE MEASURES**

SPILL OR LEAK PROCEDURES: Sweep up spilled solids, powder and fines. Keep finely divided niobium away from any source of ignition and cleanup immediately. During cleanup avoid generation of airborne dust. Follow Guide No. 133 for spill response.

**SECTION 7. HANDLING AND STORAGE**

PRECAUTIONS TO TAKE DURING HANDLING AND STORAGE:

Keep material dry. Avoid contact with water. Keep barrels sealed to prevent moisture entry during shipment. Upon receipt, loosen lids to prevent over pressure in the container.

OTHER PRECAUTIONS:

Periodically open sealed barrels to prevent over pressure and accumulation of hydrogen, ammonia, and acetylene gases. **Warning:** May Form Combustible (Explosive) Dust - Air Mixtures. Keep away from all ignition sources including heat, sparks, and flame. Keep container closed and grounded. Prevent dust accumulations to minimize explosion hazard.**SECTION 8. EXPOSURE CONTROL, PERSONAL PROTECTION**

RESPIRATORY PROTECTION: Wear the appropriate NIOSH approved respirator if exposure exceeds 1/2 the Permissible Exposure Limit.

PROTECTIVE: Wear FR rated clothing &amp; gloves when processing this material.

EYE PROTECTION: Wear safety glasses with side shields or safety goggles consistent with a PPE Assessment of the task involving the material.

ADDITIONAL PROTECTIVE MEASURES: None.

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

BOILING POINT @ 760 mm Hg: Above 2000°C

VAPOR DENSITY (AIR = 1): N.Ap.

SPECIFIC GRAVITY (H<sub>2</sub>O = 1): 5-7

Ph OF SOLUTIONS: Slightly Basic

FREEZING/MELTING POINT: Above 1800°C

SOLUBILITY (WEIGHT % IN WATER): Less than 1%

BULK DENSITY: About 140-160 lb/ft<sup>3</sup>

% VOLATILE BY VOLUME: N.Ap.

VAPOR PRESSURE: N.Ap.

EVAPORATION RATE: N.Ap.

HEAT OF SOLUTION: N.Ap.

APPEARANCE AND ODOR: Light to dark gray metal and powder with a trace odor of Ammonia and Acetylene.

**SECTION 10. STABILITY AND REACTIVITY**

STABILITY: Stable. Avoid contact with moisture.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Moisture. Sources of ignition.

INCOMPATIBILITY (Materials to Avoid): Moisture will react with some compounds in this material to generate hydrogen and acetylene gas. Concentrations can become significant only in closed containers. Avoid contact with chlorinated solvents.

HAZARDOUS DECOMPOSITION PRODUCTS: None.

**SECTION 11. TOXICOLOGICAL INFORMATION**

TARGET ORGANS: None.

TOXICITY DATA: Niobium Metal is non-toxic.  
 Niobium Oxide is non-toxic.  
 Aluminum metal is non-toxic.  
 Aluminum Oxide is non-toxic.  
 Tantalum Oxide is non-toxic.  
 Hafnium Oxide is non-toxic.  
 Zirconium Oxide is non-toxic.  
 Barium Aluminate - no known data. Also see comments below.

CORROSIVE: No

CARCINOGEN: No

SENSITIZER: No

COMMENTS: The small quantity of barium present is barium aluminate. Short-term EPA leaching test using acetic acid indicates there is no barium extracted.

ACUTE EFFECTS FROM EXPOSURE: None known.

CHRONIC EFFECTS FROM EXPOSURE: None known.

REFERENCES: Casarett and Doull's Toxicology, 2nd Ed.  
 Registry of Toxic Effects of Chemical Substances, 1985-6.  
 Patty's Industrial Hygiene and Toxicology, 3rd Ed, Vol. 2A

**SECTION 12. ECOLOGICAL PROTECTION**

ENVIRONMENTAL HAZARDS: None. As niobium or niobium alloy, this material is non-toxic

**SECTION 13. DISPOSAL CONSIDERATIONS**

WASTE DISPOSAL: Comply with Federal, State, and Local requirements for waste disposal. Fine, non-recyclable scrap may be considered a hazardous flammable solid

**SECTION 14. TRANSPORTATION REQUIREMENTS**

DEPARTMENT OF TRANSPORTATION CLASSIFICATION: Hazardous Material

D.O.T. PROPER SHIPPING NAME

Flammable Solid, Inorganic, N.O.S.

PACKING GROUP

III

LABELS REQUIRED

Flammable Solid

D.O.T. I.D. NUMBER

UN3178

HAZARD CLASS

4.1

NORTH AMERICAN EMERGENCY RESPONSE GUIDE NUMBER

133

**SECTION 15. REGULATORY INFORMATION**

Section 313 Supplier Notification: This product contains the following chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (40 CFR 372): None

In addition to the ingredients listed in Section 2, this product contains the following chemicals considered by the State of California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) as causing cancer or reproductive toxicity and for which warnings are now required: None

The Comprehensive Environmental Response, Compensation, and Liability Act of 1990, Sec102 (40 CFR 302) requires that any "release" into the "environment" of these hazardous substances contained in a product in excess of the "reportable quantity" in any 24-hour period must be immediately reported to the National Response Center (800-424-8802). Reporting is not required under certain circumstances such as a federally permitted release or the release of certain metal solid particles with a diameter larger than 100 micrometers: None

The Superfund Amendments and Reauthorization Act of 1986 (40 CFR 355) specifies certain emergency planning and notification requirements if these extremely hazardous substances are present in concentrations of greater than 1% at a facility in amounts greater than the threshold planning quantity: None

If this product is discarded as a waste, it would be identified with the following hazardous waste classification under the Resource Conservation and Recovery Act (40 CFR 261). The act specifies requirements for the management and disposal of hazardous wastes: If discarded finely divided material could exhibit the characteristics of D001 Flammable solid. Site specific testing is required.

Components on Canadian "ingredient Disclosure List": All components listed on the Ingredient Disclosure List

TSCA (Toxic Substances Control Act): Components of this product listed on the TSCA Inventory are: All listed on TSCA Inventory

**SECTION 16. OTHER INFORMATION**

None

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