



SAFETY DATA SHEET

Issue Date 28-May-2015

Revision Date 08-Feb-2017

Version I

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product identifier

Product Name Niobium E.B. Furnace Slag

Other means of identification

Product Code SAC007
Synonyms Columbium E.B. Furnace Slag (Product #118)

Recommended use of the chemical and restrictions on use

Recommended Use Alloy product manufacture.
Uses advised against

Details of the supplier of the safety data sheet

Manufacturer Address
ATI, 1000 Six PPG Place, Pittsburgh, PA
15222 USA

Emergency telephone number
Emergency Telephone Chemtrec: 1-800-424-9300

2. HAZARDS IDENTIFICATION

Classification

This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Label elements

Emergency Overview

Appearance Various blends of powders and chunks	Physical state Solid	Odor Odorless
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Hazards not otherwise classified (HNOC)

Not applicable

Other Information

Not applicable

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms Columbium E.B. Furnace Slag, (Product #118).

Chemical Name	CAS No.	Weight-%
Niobium (Columbium)	7440-03-1	5 - 65
Aluminum	7429-90-5	1 - 15
Diniobium Pentaoxide	1313-96-8	5 - 15

Aluminum Oxide	1344-28-1	1 - 13
Zirconium Dioxide	1314-23-4	1 - 10
Hafnium Dioxide	12055-23-1	0 - 5
Titanium Dioxide	13463-67-7	0 - 5
Barium Aluminate	12254-17-9	0 - 2
Ditantalum Pentaoxide	1314-61-0	0 - 1

4. FIRST AID MEASURES

First aid measures

Eye contact	In the case of particles coming in contact with eyes during processing, treat as with any foreign object.
Skin Contact	None under normal use conditions.
Inhalation	If excessive amounts of smoke, fume, or particulate are inhaled during processing, remove to fresh air and consult a qualified health professional.
Ingestion	IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

Most important symptoms and effects, both acute and delayed

Symptoms None anticipated.

Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

Non-combustible.

Unsuitable extinguishing media Non-combustible.

Specific hazards arising from the chemical

Non-combustible.

Hazardous combustion products Not applicable.

Explosion data

Sensitivity to Mechanical Impact None.

Sensitivity to Static Discharge None.

Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH approved (or equivalent) respirator and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Use personal protective equipment as required.

For emergency responders Use personal protective equipment as required.

Environmental precautions

Environmental precautions Collect spillage to prevent release to the environment.

Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so.

Methods for cleaning up Sweep or shovel material into dry containers. Avoid creating uncontrolled dust.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep in properly labeled containers.

Incompatible materials None known.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Chemical Name	ACGIH TLV	OSHA PEL
Niobium (Columbium) 7440-03-1	-	-
Diniobium Pentaoxide 1313-96-8	-	-
Aluminum 7429-90-5	TWA: 1 mg/m ³ respirable fraction	TWA: 15 mg/m ³ total dust TWA: 5 mg/m ³ respirable fraction
Aluminum Oxide 1344-28-1	TWA: 1 mg/m ³ respirable fraction	TWA: 15 mg/m ³ total dust TWA: 5 mg/m ³ respirable fraction
Zirconium Dioxide 1314-23-4	STEL: 10 mg/m ³ Zr TWA: 5 mg/m ³ Zr	TWA: 5 mg/m ³ Zr (vacated) STEL: 10 mg/m ³ Zr
Titanium Dioxide 13463-67-7	TWA: 10 mg/m ³	TWA: 15 mg/m ³ total dust
Hafnium Dioxide 12055-23-1	TWA: 0.5 mg/m ³ Hf	-
Barium Aluminate 12254-17-9	-	-
Ditantalum Pentaoxide 1314-61-0	-	TWA: 5 mg/m ³ dust

Appropriate engineering controls

Engineering Controls Avoid generation of uncontrolled particles.

Individual protection measures, such as personal protective equipment

Eye/face protection When airborne particles may be present, appropriate eye protection is recommended. For example, tight-fitting goggles, foam-lined safety glasses or other protective equipment that shield the eyes from particles.

Skin and body protection Wear protective gloves.

Respiratory protection When particulates/fumes/gases are generated and if exposure limits are exceeded or irritation is experienced, proper approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

General Hygiene Considerations Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	Solid	Odor	Odorless
Appearance	Various blends of powders and chunks	Odor threshold	Not applicable
Color	metallic gray or silver		

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
pH	-	Not applicable
Melting point/freezing point	1800 °C / 3270 °F	Not applicable
Boiling point / boiling range	-	Not applicable
Flash point	-	
Evaporation rate	-	Not applicable
Flammability (solid, gas)	-	Not flammable
Flammability Limit in Air	-	Not applicable
Upper flammability limit:	-	
Lower flammability limit:	-	
Vapor pressure	-	Not applicable
Vapor density	-	Not applicable
Specific Gravity	5-7	Not applicable
Water solubility	Insoluble	Not applicable
Solubility in other solvents	-	
Partition coefficient	-	Not applicable
Autoignition temperature	-	Not applicable
Decomposition temperature	-	Not applicable
Kinematic viscosity	-	Not applicable
Dynamic viscosity	-	
Explosive properties	Not applicable	
Oxidizing properties	Not applicable	

Other Information

Softening point	-
Molecular weight	-
VOC Content (%)	Not applicable
Density	-
Bulk density	140-160 lb/ft ³

10. STABILITY AND REACTIVITY

Reactivity
Not applicable

Chemical stability
Stable under normal conditions.

Possibility of Hazardous Reactions
None under normal processing.

Hazardous polymerization Hazardous polymerization does not occur.

Conditions to avoid
Dust formation and dust accumulation.

Incompatible materials
None known.

Hazardous Decomposition Products
Not applicable.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Inhalation	Product not classified.
Eye contact	Product not classified.
Skin Contact	Product not classified.
Ingestion	Product not classified.

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Niobium (Columbium) 7440-03-1	> 10,000 mg/kg bw	> 2000 mg/kg bw	-
Diniobium Pentaoxide 1313-96-8	> 8000 mg/kg bw	-	> 3.89 mg/L
Aluminum 7429-90-5	15,900 mg/kg bw	-	> 1 mg/L
Aluminum Oxide 1344-28-1	15,900 mg/kg bw	-	7.6 mg/L
Zirconium Dioxide 1314-23-4	>5000 mg/kg bw	-	>4.3 mg/L
Titanium Dioxide 13463-67-7	>5,000 mg/kg bw	-	-
Hafnium Dioxide 12055-23-1	>2000 mg/kg bw	-	>4.3 mg/L
Barium Aluminate 12254-17-9	-	-	-
Ditantalum Pentaoxide 1314-61-0	> 8000 mg/kg bw	-	-

Information on toxicological effects

Symptoms None known.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Acute toxicity	Product not classified.
Skin corrosion/irritation	Product not classified.
Serious eye damage/eye irritation	Product not classified.
Sensitization	Product not classified.
Germ cell mutagenicity	Product not classified.
Carcinogenicity	Product not classified.

Chemical Name	ACGIH	IARC	NTP	OSHA
Titanium Dioxide 13463-67-7		Group 2B		X

Reproductive toxicity	Product not classified.
STOT - single exposure	Product not classified.
STOT - repeated exposure	Product not classified.
Aspiration hazard	Product not classified.

12. ECOLOGICAL INFORMATIONEcotoxicity

This product as shipped is not classified for aquatic toxicity.

Chemical Name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea

Niobium (Columbium) 7440-03-1	-	-	-	-
Diniobium Pentaoxide 1313-96-8	The 72 h EC50 of Ditantalum pentaoxide to <i>Desmodemus subspicatus</i> was greater than 1 mg/L	The 96 h LC50 of Ditantalum pentaoxide to <i>Danio rerio</i> was greater than or equal to 1 mg/L.	The 3 h EC50 of Ditantalum pentaoxide for activated sludge was greater than 10,000 mg/L.	The 48 h EC50 of Ditantalum pentaoxide to <i>Daphnia magna</i> was greater than or equal to 1 mg/L.
Aluminum 7429-90-5	The 96-h EC50 values for reduction of biomass of <i>Pseudokirchneriella subcapitata</i> in AAP-Medium at pH 6, 7, and 8 were estimated as 20.1, 5.4, and 150.6 µg/L, respectively, for dissolved Al.	The 96 h LC50 of aluminum to <i>Oncorhynchus mykiss</i> was 7.4 mg of Al/L at pH 6.5 and 14.6 mg of Al/L at pH 7.5	-	The 48-hr LC50 for <i>Ceriodaphnia dubia</i> exposed to Aluminium chloride increased from 0.72 to greater than 99.6 mg/L with water hardness increasing from 25 to 200 mg/L.
Aluminum Oxide 1344-28-1	The 96-h EC50 values for reduction of biomass of <i>Pseudokirchneriella subcapitata</i> in AAP-Medium at pH 6, 7, and 8 were estimated as 20.1, 5.4, and 150.6 µg/L, respectively, for dissolved Al.	The 96 h LC50 of Aluminum chloride to <i>Oncorhynchus mykiss</i> ranged from 7.4 mg of Al/L at pH 6.5 to 14.6 mg of Al/L at pH 7.5. The 96-hr LC50 for <i>Pimephales promelas</i> exposed to Aluminum chloride ranged from 1.16 to 44.8 mg/L with water hardness increasing from 25 to 200 mg/L.	-	The 48-hr EC50 for <i>Ceriodaphnia dubia</i> exposed to Aluminium chloride ranged from 1.9 to 2.6 mg/L with pH ranging from 7.42 to 8.13.
Zirconium Dioxide 1314-23-4	The 15 d NOEC of zirconium dichloride oxide to <i>Chlorella vulgaris</i> was greater than 200 mg/L	The 96 h LL50 of zirconium dioxide to <i>Danio rerio</i> was greater than 100 mg/L.	-	The 48 h EC50 of zirconium dioxide to <i>Daphnia magna</i> was greater than 100 mg/L
Titanium Dioxide 13463-67-7	The 72 h EC50 of titanium dioxide to <i>Pseudokirchnerella subcapitata</i> was 61 mg of TiO ₂ /L.	The 96h LC50s values of titanium dioxide range from greater than 100 mg TiO ₂ /L for <i>Oncorhynchus mykiss</i> to greater than 1000 mg TiO ₂ /L for <i>Pimephales promelas</i>	The 3 h EC50 of titanium dioxide for activated sludge were greater than 1000 mg/L.	The 48 h LC50 of titanium dioxide to <i>Daphnia magna</i> was greater than 100 mg of TiO ₂ /L.
Hafnium Dioxide 12055-23-1	The 72 h EC50 of Hafnium dioxide in water to <i>Pseudokirchneriella subcapitata</i> was greater than the solubility limit of 0.008 mg Hf/L	The 96 h LC50 of Hafnium dioxide in water to <i>Danio rerio</i> was greater than the solubility limit of 0.007 mg Hf/L	-	The 48 h EC50 of Hafnium dioxide to <i>Daphnia magna</i> was greater than the solubility limit of 0.007 mg Hf/L
Barium Aluminate 12254-17-9	-	-	-	-
Ditantalum Pentaoxide 1314-61-0	-	-	-	-

Persistence and degradability

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Bioaccumulation**Other adverse effects****13. DISPOSAL CONSIDERATIONS****Waste treatment methods****Disposal of wastes**

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated packaging

Disposal should be in accordance with applicable regional, national and local laws and regulations.

This product contains one or more substances that are listed with the State of California as a hazardous waste.

14. TRANSPORT INFORMATION

DOT Not regulated

15. REGULATORY INFORMATION

International Inventories

TSCA	Complies
DSL/NDSL	Complies
EINECS/ELINCS	Not Listed
ENCS	Not Listed
IECSC	Complies
KECL	Not Listed
PICCS	Not Listed
AICS	Not Listed

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

ENCS - Japan Existing and New Chemical Substances

IECSC - China Inventory of Existing Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

AICS - Australian Inventory of Chemical Substances

US Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical Name	CAS No.	Weight-%	SARA 313 - Threshold Values %
Aluminum Oxide - 1344-28-1	1344-28-1	1 - 13	1.0

SARA 311/312 Hazard Categories

Acute health hazard	No
Chronic Health Hazard	No
Fire hazard	No
Sudden release of pressure hazard	No
Reactive Hazard	No

CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

US State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals

Chemical Name	California Proposition 65
Titanium Dioxide - 13463-67-7	Carcinogen

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Aluminum 7429-90-5	X	X	X
Aluminum Oxide 1344-28-1	X	X	X
Zirconium Dioxide 1314-23-4		X	
Titanium Dioxide 13463-67-7	X	X	X
Ditantalum Pentaoxide 1314-61-0	X		

U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable

16. OTHER INFORMATION

NFPA	Health hazards 1	Flammability 0	Instability 0	Physical and Chemical Properties -
HMIS	Health hazards 1*	Flammability 0	Physical hazards 0	Personal protection X
<i>Chronic Hazard Star Legend</i>	<i>* = Chronic Health Hazard</i>			

Issue Date 28-May-2015

Revision Date 08-Feb-2017

Revision Note

Updated Section(s): 6, 7, 11, 12, 15

Note:

The information provided in this safety data sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

Additional information available from: Safety data sheets and labels available at ATImetals.com