



# SAFETY DATA SHEET

Issue Date 29-Jun-2022

Revision Date 29-Jun-2022

Version 1

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

### Product identifier

**Product Name** Uncrushed Niobium E.B. Furnace Slag

### Other means of identification

**Product Code** SAC068

**Synonyms** Uncrushed Niobium Electron Beam Furnace Slag, Uncrushed Columbium E.B. Furnace Slag

### Recommended use of the chemical and restrictions on use

**Recommended Use** Chemical intermediate.

**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** Chunks with powder      **Physical state** Solid      **Odor** Odorless

### Hazards not otherwise classified (HNOC)

Not applicable

### Other Information

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

**Synonyms** Uncrushed Niobium Electron Beam Furnace Slag, Uncrushed Columbium E.B. Furnace Slag.

Chemical Name	CAS No.	Weight-%
Niobium (Columbium)	7440-03-1	5 - 65
Diiron trioxide	1309-37-1	0 - 23

Hafnium Dioxide	12055-23-1	0 - 18
Diniobium Pentaoxide	1313-96-8	5 - 15
Aluminum	7429-90-5	1 - 15
Aluminum Oxide	1344-28-1	1 - 13
Zirconium Dioxide	1314-23-4	1 - 10
Titanium Dioxide	13463-67-7	0 - 6
Barium Aluminate	12004-04-05	0 - 2
Ditantalum Pentaoxide	1314-61-0	0 - 1

#### 4. FIRST AID MEASURES

##### First aid measures

<b>Eye contact</b>	In the case of particles coming in contact with eyes during processing, treat as with any foreign object.
<b>Skin Contact</b>	None under normal use conditions.
<b>Inhalation</b>	If excessive amounts of smoke, fume, or particulate are inhaled during processing, remove to fresh air and consult a qualified health professional.
<b>Ingestion</b>	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

Product not flammable in the form as distributed, flammable as finely divided particles or pieces resulting from processing of this product.

**Unsuitable extinguishing media** Do not spray water on burning metal as an explosion may occur. This explosive characteristic is caused by the hydrogen and steam generated by the reaction of water with the burning material.

##### Specific hazards arising from the chemical

May ignite when crushed. Intense heat. Very fine, high surface area material resulting from grinding, buffing, polishing, or similar processes of this product may ignite spontaneously at room temperature. WARNING: Fine particles resulting from grinding, buffing, polishing, or similar processes of this product may form combustible dust-air mixtures. Keep particles away from all ignition sources including heat, sparks, and flame. Prevent dust accumulations to minimize combustible dust hazard.

**Hazardous combustion products** Not applicable.

##### Explosion data

**Sensitivity to Mechanical Impact** None.

**Sensitivity to Static Discharge** None.

##### Protective equipment and precautions for firefighters

Firefighters should wear self-contained breathing apparatus and full firefighting turnout 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** May ignite when crushed. Very fine, high surface area material resulting from processing this product may ignite spontaneously at room temperature. WARNING: Fine particles of this product may form combustible dust-air mixtures. Keep particles away from all ignition sources including heat, sparks, and flame. Prevent dust accumulations to minimize combustible dust hazard.

**Conditions for safe storage, including any incompatibilities**

**Storage Conditions** Keep away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric motors and static electricity).

**Incompatible materials** Dissolves in hydrofluoric acid.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Control parameters**

Chemical Name	ACGIH TLV	OSHA PEL
Niobium (Columbium) 7440-03-1	-	-
Diiron trioxide 1309-37-1	-	-
Hafnium Dioxide 12055-23-1	TWA: 0.5 mg/m <sup>3</sup> Hf	-
Diniobium Pentaoxide 1313-96-8	-	-
Aluminum 7429-90-5	TWA: 1 mg/m <sup>3</sup> respirable fraction	TWA: 15 mg/m <sup>3</sup> total dust TWA: 5 mg/m <sup>3</sup> respirable fraction
Aluminum Oxide 1344-28-1	TWA: 1 mg/m <sup>3</sup> respirable fraction	TWA: 15 mg/m <sup>3</sup> total dust TWA: 5 mg/m <sup>3</sup> respirable fraction
Zirconium Dioxide 1314-23-4	STEL: 10 mg/m <sup>3</sup> Zr TWA: 5 mg/m <sup>3</sup> Zr	TWA: 5 mg/m <sup>3</sup> Zr (vacated) STEL: 10 mg/m <sup>3</sup> Zr
Titanium Dioxide 13463-67-7	TWA: 10 mg/m <sup>3</sup>	TWA: 15 mg/m <sup>3</sup> total dust
Barium Aluminate 12004-04-05	-	-
Ditantalum Pentaoxide 1314-61-0	-	TWA: 5 mg/m <sup>3</sup> dust

**Appropriate engineering controls**

**Engineering Controls** Avoid generation of uncontrolled particles.

**Individual protection measures, such as personal protective equipment**

<b>Eye/face protection</b>	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.
<b>Skin and body protection</b>	Fire/flame resistant/retardant clothing may be appropriate during hot work with the product.
<b>Respiratory protection</b>	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.
<b>General Hygiene Considerations</b>	Handle in accordance with good industrial hygiene and safety practice.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### Information on basic physical and chemical properties

<b>Physical state</b>	Solid	<b>Odor</b>	Odorless
<b>Appearance</b>	Chunks with powder	<b>Odor threshold</b>	Not applicable
<b>Color</b>	Metallic gray or silver		
<b>Property</b>	<b>Values</b>	<b>Remarks • Method</b>	
<b>pH</b>	-	Not applicable	
<b>Melting point / freezing point</b>	1800 °C / 3270 °F		
<b>Boiling point / boiling range</b>	-		
<b>Flash point</b>	-	Not applicable	
<b>Evaporation rate</b>	-	Not applicable	
<b>Flammability (solid, gas)</b>	-	Not flammable	
<b>Flammability Limit in Air</b>			
<b>Upper flammability limit:</b>	-		
<b>Lower flammability limit:</b>	-		
<b>Vapor pressure</b>	-	Not applicable	
<b>Vapor density</b>	-	Not applicable	
<b>Specific Gravity</b>	5-7		
<b>Water solubility</b>	-		
<b>Solubility in other solvents</b>	-		
<b>Partition coefficient</b>	-	Not applicable	
<b>Autoignition temperature</b>	-	Not applicable	
<b>Decomposition temperature</b>	-	Not applicable	
<b>Kinematic viscosity</b>	-	Not applicable	
<b>Dynamic viscosity</b>	-		
<b>Explosive properties</b>	Not applicable		
<b>Oxidizing properties</b>	Not applicable		

### Other Information

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

## 10. STABILITY AND REACTIVITY

### Reactivity

Not applicable

### Chemical stability

Stable under normal conditions.

**Possibility of Hazardous Reactions**

May ignite when crushed.

**Hazardous polymerization** Hazardous polymerization does not occur.**Conditions to avoid**

Dust formation and dust accumulation.

**Incompatible materials**

Dissolves in hydrofluoric acid.

**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	-
Diiron trioxide 1309-37-1	> 5000 mg/kg bw	-	> 5 mg/L
Hafnium Dioxide 12055-23-1	>2000 mg/kg bw	-	>4.3 mg/L
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	-	> 6.82 mg/L
Barium Aluminate 12004-04-05	-	-	-
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
--------------------------------	--	----------	--	---

<b>Reproductive toxicity</b>	Product not classified.
<b>STOT - single exposure</b>	Product not classified.
<b>STOT - repeated exposure</b>	Product not classified.
<b>Aspiration hazard</b>	Product not classified.

## 12. ECOLOGICAL INFORMATION

### Ecotoxicity

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	-	-	-	-
Diiron trioxide 1309-37-1	-	The 96 h LC50 of Diiron trioxide to Danio rerio was greater than or equal to 50,000 mg/L .	The 3 h EC50 of Diiron trioxide for activated sludge was greater than 10,000 mg/L.	The 48 h EC50 of Diiron trioxide to Daphnia magna was greater than or equal to 100 mg/L .
Hafnium Dioxide 12055-23-1	The 72 h EC50 of Hafnium dioxide in water to Pseudokirchneriella subcapitata was greater than the solubility limit of 0.008 mg Hf/L	The 96 h LC50 of Hafnium dioxide in water to Danio rerio was greater than the solubility limit of 0.007 mg Hf/L	-	The 48 h EC50 of Hafnium dioxide to Daphnia magna was greater than the solubility limit of 0.007 mg Hf/L
Diniobium Pentaoxide 1313-96-8	The 72 h EC50 of Ditantalum pentaoxide to Desmodesmus subspicatus was greater than 1 mg/L	The 96 h LC50 of Ditantalum pentaoxide to Danio rerio 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 Daphnia magna was greater than or equal to 1 mg/L.
Aluminum 7429-90-5	The 96-h EC50 values for reduction of biomass of Pseudokirchneriella subcapitata 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 Oncorhynchus mykiss 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 Ceriodaphnia dubia 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 Pseudokirchneriella subcapitata 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 Oncorhynchus mykiss 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 Pimephales promelas 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 Ceriodaphnia dubia 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 Chlorella vulgaris was greater than 200 mg/L	The 96 h LL50 of zirconium dioxide to Danio rerio was greater than 100 mg/L.	-	The 48 h EC50 of zirconium dioxide to Daphnia magna was greater than 100 mg/L
Titanium Dioxide 13463-67-7	The 72 h EC50 of titanium dioxide to Pseudokirchnerella subcapitata was 61 mg of TiO2/L.	The 96h LC50s values of titanium dioxide range from greater than 100 mg TiO2/L for Oncorhynchus mykiss to greater than 1000 mg TiO2/L for Pimephales promelas	The 3 h EC50 of titanium dioxide for activated sludge were greater than 1000 mg/L.	The 48 h LC50 of titanium dioxide to Daphnia magna was greater than 100 mg of TiO2/L.
Barium Aluminate 12004-04-05	-	-	-	-
Ditantalum Pentaoxide 1314-61-0	-	-	-	-

Other adverse effects**13. DISPOSAL CONSIDERATIONS**Waste treatment methods

<b>Disposal of wastes</b>	Disposal should be in accordance with applicable regional, national and local laws and regulations.
<b>Contaminated packaging</b>	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

<b>TSCA</b>	Complies
<b>DSL/NDL</b>	Complies
<b>EINECS/ELINCS</b>	Complies
<b>ENCS</b>	Complies
<b>IECSC</b>	Not Listed
<b>KECL</b>	Complies
<b>PICCS</b>	Not Listed
<b>AICS</b>	Not Listed

Legend:

**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory  
**DSL/NDL** - 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 contains a chemical or 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 (fibrous forms only)

SARA 311/312 Hazard Categories

<b>Acute health hazard</b>	No
<b>Chronic Health Hazard</b>	No
<b>Fire hazard</b>	No
<b>Sudden release of pressure hazard</b>	No
<b>Reactive Hazard</b>	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 contains the Proposition 65 chemicals listed below. Proposition 65 warning label available at ATImetals.com.

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**

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

Issue Date 29-Jun-2022

Revision Date 29-Jun-2022

**Revision Note**

New Safety Data Sheet

**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 ATImaterials.com