SAFETY DATA SHEET

Issue Date 12-Jun-2015 **Revision Date** 18-Dec-2015 **Version 2**

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

Product identifier
Product Name Niobium Thermite Slag

Other means of identification
Product Code SAC025
Synonyms Columbium Thermite Slag (Product #112)

Recommended use of the chemical and restrictions on use
Recommended Use Niobium Compounds.
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 considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute toxicity - Oral	Category 4
Skin corrosion/irritation	Category 1 Sub-category B
Serious eye damage/eye irritation	Category 1

Label elements

Emergency Overview

Danger

Hazard statements
Harmful if swallowed
Causes severe skin burns and eye damage
Causes serious eye damage

Appearance Various blends of powders and chunks **Physical state** Solid **Odor** Odorless

Precautionary Statements - Prevention

Do not breathe dust/fume/gas/mist/vapors/spray
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Wear protective gloves/protective clothing/eye protection/face protection

Precautionary Statements - Response

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Immediately call a POISON CENTER or doctor/physician.
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing, Rinse skin with water/shower
Wash contaminated clothing before reuse
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)
Not applicable
Other Information
Not applicable

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms Columbium Thermite Slag (Product #112).

Chemical Name	CAS No.	Weight-%
Aluminum Oxide	1344-28-1	75-85
Barium Oxide	1304-28-5	15-25
Diniobium Pentaoxide	1313-96-8	0-3
Niobium (Columbium)	7440-03-1	0-3

.

4. FIRST AID MEASURES

First aid measures

Eye contact Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.

Skin Contact Remove dry material from skin with a dry cloth, then flush with plenty of water.

Inhalation If excessive amounts of vapors, smoke, fume, or particles are inhaled during processing, remove to fresh air and consult a qualified health professional.

Ingestion Do NOT induce vomiting. Clean mouth with water and drink afterwards plenty of water. Call a physician or poison control center immediately.

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 See section 12 for additional ecological information.

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
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
Barium Oxide 1304-28-5	TWA: 0.5 mg/m^3 Ba	TWA: 0.5 mg/m^3 Ba
Diniobium Pentaoxide 1313-96-8	-	-
Niobium (Columbium) 7440-03-1	-	-

Appropriate engineering controls

Engineering Controls Avoid generation of uncontrolled particles.

Individual protection measures, such as personal protective equipment

Eye/face protection If a risk of eye injury or irritation is present, appropriate eye protection is recommended; for example, tight-fitting goggles, foam-lined safety glasses or other protective equipment that shields the eyes.

Skin and body protection Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

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 contaminat 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		
Appearance	Various blends of powders and chunks	**Odor**	Odorless
Color	gray	**Odor threshold**	Not applicable

Property	**Values**	**Remarks • Method**
pH	>7	Not applicable
Melting point/freezing point	1900 °C / 3450 °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	4	Not applicable
Water solubility	0.5-1	Soluble in water
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	150-190 lb/ft3

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 Corrosive to the eyes and may cause severe damage including blindness.

Skin Contact Contact causes severe skin irritation and possible burns.

Ingestion Harmful if swallowed.

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Aluminum Oxide 1344-28-1	15,900 mg/kg bw	-	7.6 mg/L
Barium Oxide 1304-28-5	146 mg/kg bw	-	-
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

Information on toxicological effects

Symptoms None known.

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

Acute toxicity Harmful if swallowed.
Skin corrosion/irritation Causes severe burns.
Serious eye damage/eye irritation Risk of serious damage to eyes.
Sensitization Product not classified.
Germ cell mutagenicity Product not classified.
Carcinogenicity Product not classified.

Reproductive toxicity Product not classified.
STOT - single exposure Product not classified.
STOT - repeated exposure Product not classified.
Aspiration hazard 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
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.
Barium Oxide 1304-28-5	The 96 h IC50 of Barium to Lemna minor was 102 mg/L.	The 28-day LC50 of Barium to Oncorhynchus mykiss was 42.7 mg/L	The 3 h EC50 of Barium Oxide for activated sludge was greater than 1000 mg/L.	The 48-hr EC50 for Daphnia magna exposed to Barium was 14.5 mg/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.
Niobium (Columbium) 7440-03-1	-	-	-	-

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	Complies
ENCS	Complies
IECSC	Complies

KECL	Complies
PICCS	Complies
AICS	Complies

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 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	75-85	1.0
Barium Oxide - 1304-28-5	1304-28-5	15-25	1.0

SARA 311/312 Hazard Categories

Acute health hazard	Yes
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

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Aluminum Oxide 1344-28-1	X	X	X
Barium Oxide 1304-28-5	X		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** 2	**Flammability** 0	**Physical hazards** 0	**Personal protection** X

Chronic Hazard Star Legend * = Chronic Health Hazard

Issue Date 12-Jun-2015
Revision Date 18-Dec-2015
Revision Note
Updated Section 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