



SAFETY DATA SHEET

Issue Date 25-Mar-2020

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Version 1

Section 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Product Code SAC021
Product Name Niobium Thermite Mixture

UN/ID no 3132
Synonyms Niobium Thermite Mixture

1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Chemical intermediate

Uses advised against

1.3. Details of the supplier of the safety data sheet

Manufacturer

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

1.4. Emergency telephone number

Emergency Telephone Chemtrec: +1-703-741-5970

Section 2: HAZARDS IDENTIFICATION

This material is classified per Regulation (EC) No 1272/2008.

2.1. Classification of the substance or mixture *Regulation (EC) No 1272/2008*

Acute toxicity - Oral	Category 4
Acute toxicity - Inhalation (Dusts/Mists)	Category 4
Oxidising solids	Category 2
Flammable solids	Category 1
Substances or mixtures which, in contact with water, emit flammable gases	Category 2

2.2. Label elements

Emergency Overview

Danger

Hazard statements

Harmful if swallowed
Harmful if inhaled
May intensify fire; oxidiser
Flammable solid
In contact with water releases flammable gases

**Appearance** Powder**Physical state** Solid**Odour** Odourless**Precautionary Statements - Prevention**

Wear protective gloves/protective clothing/eye protection/face protection
 Keep away from heat/sparks/open flames/hot surfaces. - No smoking
 Wash hands thoroughly after handling
 Do not eat, drink or smoke when using this product
 Avoid breathing dust/fume
 Use only outdoors or in a well-ventilated area
 Keep/Store away from combustible materials
 Keep away from any possible contact with water, because of violent reaction and possible flash fire
 Ground/bond container and receiving equipment
 If dust clouds can occur, use explosion-proof electrical/ ventilating/lighting/equipment
 Protect from moisture

Precautionary Statements - Response

IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell
 Rinse mouth
 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
 IF INHALED: Call a POISON CENTER or doctor if you feel unwell
 IF ON SKIN (or hair): Brush off loose particles from skin: Rinse skin with water/shower
 In case of fire: Isolate fire and allow to burn out

Precautionary Statements - Storage

Store in a dry place. Store in a closed container

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

2.3 Hazards not otherwise classified (HNOC)

Not applicable

Other Information

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Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Synonyms Niobium Thermite Mixture.

Chemical Name	EC No	CAS No	Weight-%
Niobium Pentoxide	215-213-6	1313-96-8	60
Aluminium	231-072-3	7429-90-5	25
Barium Peroxide	215-128-4	1304-29-6	15

Section 4: FIRST AID MEASURES

4.1. Description of first aid measures

Inhalation IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for

breathing. Call a doctor or poison control centre immediately.

Skin Contact Brush off loose particles from skin. Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

Eye contact Flush with water for 15 minutes. See a physician.

Ingestion IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms Contact with moist skin may cause skin burns. May cause breathing difficulties if inhaled.

4.3. Indication of any immediate medical attention and special treatment needed

Note to doctors Treat symptomatically.

Section 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

Suitable extinguishing media

Isolate fire and allow to burn out.

Unsuitable extinguishing media

If a fire occurs in the area, avoid water contact with the product to prevent evolution of hazardous gases. Do not spray water on burning product 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.

5.2. Special hazards arising from the substance or mixture

Intense heat. Will be easily ignited by heat, sparks or flames Burns vigorously after ignition. 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 minimise combustible dust hazard. This is a strong oxidizer and will react vigorously or explosively with many materials including organic materials, such as wood and paper, and flammable metals.

Hazardous combustion products Not applicable.

5.3. Advice for firefighters

Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear.

Section 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions

Use personal protective equipment as required.

For emergency responders

Use personal protective equipment as required. Follow Emergency Response Guidebook, Guide No. 138.

6.2. Environmental precautions

Collect spillage to prevent release to the environment.

6.3. 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 using non-sparking tools. Avoid creating

uncontrolled dust. Wash the spill location thoroughly with water. Respiratory protection may be needed. Skin and eye protection should be used during cleanup.

6.4. Reference to other sections

See Section 12: ECOLOGICAL INFORMATION.

Section 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Advice on safe handling

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 minimise combustible dust hazard. This is a strong oxidizer and will react vigorously or explosively with many materials including organic materials, such as wood and paper, and flammable metals.

General Hygiene Considerations

Handle in accordance with good industrial hygiene and safety practice.

7.2. 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). Keep in properly labelled containers. Keep in a dry, cool and well-ventilated place. Protect from direct sunlight. Containers may become pressurized. Handle and open container with care. Store away from flammable substances, reducing agents, metal powders, and organic materials. Keep container grounded to prevent static discharge.

Incompatible materials

Dissolves in hydrofluoric acid. Flammable substances, reducing agents, metal powders, and organic materials.

7.3. Specific end use(s)

Risk Management Methods (RMM)

The information required is contained in this Safety Data Sheet.

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Chemical Name	European Union	United Kingdom	France	Spain	Germany
Niobium Pentoxide 1313-96-8	-	-	-	-	-
Aluminium 7429-90-5	-	STEL: 30 mg/m ³ STEL: 12 mg/m ³ TWA: 10 mg/m ³ TWA: 4 mg/m ³	TWA: 10 mg/m ³ TWA: 5 mg/m ³	TWA: 10 mg/m ³ TWA: 5 mg/m ³	TWA: 4 mg/m ³ TWA: 1.5 mg/m ³
Barium Peroxide 1304-29-6	-	-	-	-	TWA: 0.5 mg/m ³ Ceiling / Peak: 4 mg/m ³
Chemical Name	Italy	Portugal	Netherlands	Finland	Denmark
Niobium Pentoxide 1313-96-8	-	-	-	-	-
Aluminium 7429-90-5	-	TWA: 10 mg/m ³ TWA: 5 mg/m ³	TWA: 0.05 mg/m ³	TWA: 1.5 mg/m ³	TWA: 5 mg/m ³ TWA: 2 mg/m ³
Barium Peroxide 1304-29-6	-	-	-	-	-
Chemical Name	Austria	Switzerland	Poland	Norway	Ireland
Niobium Pentoxide 1313-96-8	-	-	-	-	-
Aluminium 7429-90-5	STEL 20 mg/m ³ TWA: 10 mg/m ³	TWA: 3 mg/m ³	TWA: 2.5 mg/m ³ TWA: 1.2 mg/m ³	TWA: 5 mg/m ³ STEL: 10 mg/m ³	TWA: 1 mg/m ³ TWA: 5 mg/m ³
Barium Peroxide 1304-29-6	-	-	-	TWA: 0.5 mg/m ³ STEL: 1.5 mg/m ³	-

Derived No Effect Level (DNEL) No DNELs are available for this product as a whole

Predicted No Effect Concentration (PNEC) No PNECs are available for this product as a whole.

8.2. Exposure controls

Engineering Controls Avoid generation of uncontrolled particles.

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, face shield, or other protective equipment that shields the eyes.

Skin and body protection Fire/flame resistant/retardant clothing may be appropriate during hot work with the product. 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 contaminate concentrations. Respiratory protection must be provided in accordance with current local regulations.

Environmental exposure controls Section 6: ACCIDENTAL RELEASE MEASURES.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Physical state	Solid		
Appearance	Powder	Odour	Odourless
Colour	grey Silver	Odour threshold	Not applicable
Property	Values	Remarks • Method	
pH	-	Not applicable	
Melting point / freezing point	approx. 1852 °C		
Boiling point / boiling range	approx. 4377 °C		
Flash point	-		
Evaporation rate	-	Not applicable	
Flammability (solid, gas)	-	Flammable	
Flammability Limit in Air			
Upper flammability limit:		-	
Lower flammability limit		-	
Vapour pressure	-	Not applicable	
Vapour density	-	Not applicable	
Specific Gravity	6.49		
Water solubility	Insoluble		
Solubility(ies)			
Partition coefficient	-	Not applicable	
Autoignition temperature	-	Not applicable	
Decomposition temperature	-	Not applicable	
Kinematic viscosity	-	Not applicable	
Dynamic viscosity	-	Not applicable	
Explosive properties	Not applicable		
Oxidising properties	Strong oxidizer and will react vigorously or explosively with many materials including organic materials, such as wood and paper, and flammable metals.		

9.2. Other information

Softening point	-
Molecular weight	-
VOC Content (%)	Not applicable
Density	-
Bulk density	-

Section 10: STABILITY AND REACTIVITY

10.1. Reactivity

Strong oxidizer and will react vigorously or explosively with many materials including organic materials, such as wood and paper, and flammable metals.

10.2. Chemical stability

Stable under normal conditions.

Explosion data

Sensitivity to Mechanical Impact None.

Sensitivity to Static Discharge May be ignited by friction, heat, sparks or flames.

10.3. Possibility of hazardous reactions

Hazardous polymerisation

Hazardous polymerisation does not occur.

Possibility of Hazardous Reactions

None at standard temperature and pressure.

10.4. Conditions to avoid

Dust formation and dust accumulation. Heat, Electrostatic discharge.

10.5. Incompatible materials

Dissolves in hydrofluoric acid. Flammable substances, reducing agents, metal powders, and organic materials.

10.6. Hazardous decomposition products

Not applicable.

Section 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Product Information

Inhalation	Product not classified.
Eye contact	Product not classified.
Skin Contact	Product not classified.
Ingestion	Harmful if swallowed.

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Niobium Pentoxide	-	-	-
Aluminium	15,900 mg/kg bw	-	> 1 mg/L
Barium Peroxide	-	-	-

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	Product not classified.
Serious eye damage/eye irritation	Product not classified.
Sensitisation	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.

Section 12: ECOLOGICAL INFORMATION

12.1. Toxicity

This product as shipped is not classified for aquatic toxicity

Chemical Name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Niobium Pentoxide	-	-	-	-
Aluminium	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.
Barium Peroxide	The 72 h EC50 of Barium dichloride to <i>Pseudokirchneriella subcapitata</i> was greater than 30.1 mg Ba/L.	-	-	The 48-hr EC50 for <i>Daphnia magna</i> exposed to Barium dichloride dihydrate was 14.5 mg/L.

12.2. Persistence and degradability

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12.3. Bioaccumulative potential

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12.4. Mobility in soil

12.5. Results of PBT and vPvB assessment

The PBT and vPvB criteria do not apply to inorganic substances.

12.6. Other adverse effects

Section 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste from residues/unused products	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.

Section 14: TRANSPORT INFORMATION**IMDG**

14.1 UN/ID no	3132
14.2 Proper shipping name	Water reactive Solid, Flammable, n.o.s. (Aluminium Powder)
14.3 Hazard Class	4.3
Subsidiary hazard class	4.1
14.4 Packing Group	II
14.5 Marine pollutant	Not applicable
14.6 Special Provisions	IB4, T3, TP33
14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code	Not applicable

RID

14.1 UN/ID no	3132
14.2 Proper shipping name	Water reactive Solid, Flammable, n.o.s. (Aluminium Powder)
14.3 Hazard Class	4.3
Subsidiary hazard class	4.1
14.4 Packing Group	II
14.5 Environmental hazard	Not applicable
14.6 Special Provisions	IB4, T3, TP33

ADR

14.1 UN/ID no	3132
14.2 Proper shipping name	Water reactive Solid, Flammable, n.o.s. (Aluminium Powder)
14.3 Hazard Class	4.3
Subsidiary hazard class	4.1
14.4 Packing Group	II
14.5 Environmental hazard	Not applicable
14.6 Special Provisions	IB4, T3, TP33

ICAO (air)

14.1 UN/ID no	3132
14.2 Proper shipping name	Water reactive solid, flammable, n.o.s. (Aluminum Powder)
14.3 Hazard Class	4.3
Subsidiary hazard class	4.1
14.4 Packing Group	II
14.5 Environmental hazard	Not applicable
14.6 Special Provisions	IB4, T3, TP33

IATA

14.1 UN/ID no	3132
14.2 Proper shipping name	Water reactive solid, flammable, n.o.s. (Aluminum Powder)
14.3 Hazard Class	4.3
Subsidiary hazard class	4.1
14.4 Packing Group	II
Description	.
14.5 Environmental hazard	Not applicable
14.6 Special Provisions	IB4, T3, TP33 ERG Code 138

Section 15: REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Chemical Name	French RG number	Title
Niobium Pentoxide 1313-96-8	-	-
Aluminium 7429-90-5	RG 32 RG 16, RG 16bis	-
Barium Peroxide 1304-29-6	-	-

European Union

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work

Authorisations and/or restrictions on use:

This product does not contain substances subject to authorisation (Regulation (EC) No. 1907/2006 (REACH), Annex XIV). This product does not contain substances subject to restriction (Regulation (EC) No. 1907/2006 (REACH), Annex XVII).

International Inventories

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

15.2. Chemical safety assessment

No chemical safety assessment has been performed for this product.

Section 16: OTHER INFORMATION

Issue Date	25-Mar-2020
Revision Date	25-Mar-2020
Revision Note	Updated to comply with GHS.

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006

Note:

The information provided in this Material 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 Safety data sheets and labels available at ATImetals.com

from: