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## SAFETY DATA SHEET

Section 1- IDENTIFICATION		
COMPOSITION <b>Nb2O5</b>		PRODUCT NAME <b>Niobium Oxide</b>
SUPPLIER: <b>Plasmaterials, Inc. 2268 Research Drive Livermore, CA 94550 Ph: 925-447-4030</b>	RECOMMENDED USE: <b>Laboratory Chemicals Scientific Research</b>	EMERGENCY TELEPHONE NUMBERS <b>US: 001-800-424-9300 Europe: 001-703-527-3887</b>

Section 2- HAZARD(S) IDENTIFICATION	
<b>Physical Hazards:</b> Not Classified	<b>Skin Corrosion/Irritation:</b> Category 2 (H315)
<b>OSHA Defined Hazards:</b> Not Classified	<b>Serious Eye Damage/Eye Irritation:</b> Category 2A (H319)
<b>Environmental Hazards:</b> Not Classified	<b>Specific Target Organ Toxicity – Single Exposure:</b> Category 3, Respiratory System (H335)
<b>LABEL ELEMENTS: Signal Word:</b> Warning	
	
<b>HAZARD STATEMENTS</b>	
-H351: Causes skin irritation	
-H319: Causes serious eye irritation	
-H335: May cause respiratory irritation	
<b>PRECAUTIONARY STATEMENTS</b>	
-P261: Avoid breathing dust/fume/gas/mist/vapors/spray	
-P264: Wash face, hands and any exposed skin thoroughly after handling	
-P271: Use only outdoors or in a well-ventilated area	
-P280: Wear protective gloves, protective clothing, eye protection and face protection	
-P302+P352: IF ON SKIN: Wash with plenty of water.	
-P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing	
-P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.	
-P312: Call a poison center/doctor if you feel unwell	
-P332+P313: IF SKIN IRRITATION OCCURS: Get medical advice/attention	
-P337+P313: IF EYE IRRITATION PERSISTS: Get medical advice/attention	
-P361+P364: Take off contaminated clothing and wash it before reuse.	
-P403+P233: Store in a well-ventilated place. Keep container tightly closed.	
-P405: Store locked up	
-P501: Dispose of contents/container to an approved waste disposal plant	
<b>Hazards not otherwise classified (HNOC):</b>	
-None identified.	

### Section 3- COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT	CAS-No	Molecular Weight
Niobium Oxide	1313-96-8	265.81 g/mol

### Section 4- FIRST AID MEASURES

**GENERAL ADVICE:** If you feel unwell, seek medical advice. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**Inhalation:** Remove victim from exposure to fresh air. Give oxygen if breathing is difficult. If not breathing, give artificial respiration. Consult a physician if you feel unwell.

**Skin Contact:** Remove contaminated clothing. Wash off with soap and plenty of water. Wash contaminated clothing before reuse. If skin irritation occurs, get medical advice/attention.

**Eye Contact:** Immediately flush eyes with plenty of water, lifting upper and lower lids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical advice/attention.

**Ingestion:** Rinse mouth with water. Never give anything by mouth to an unconscious person. If symptoms occur, get medical advice/attention.

**Most Important Symptoms/Effects:** The most important known symptoms and effects are described in the labeling (see section 2) and/or in section 11. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling and blurred vision. May cause respiratory irritation. Skin irritation. May cause redness and pain.

**Indication of any Immediate Medical Attention and Special Treatment Needed:** Provide general supportive measures and treat symptomatically. Keep victim under observation as symptoms may be delayed.

### Section 5- FIREFIGHTING MEASURES

**Suitable Extinguishing Media:**

Water Fog, Foam, Dry Chemical Powder, Carbon Dioxide (CO<sub>2</sub>)

**Unsuitable Extinguishing Media:**

Do not use water jet as an extinguisher, as this will spread fire

**Specific Hazards Arising from the Chemical:**

During Fire, gases hazardous to health may be formed. Niobium Oxides

**General Fire Hazards:**

No unusual fire or explosive hazards noted

**Protective Equipment & Precautions for Firefighters:**

As in any fire, Firefighters must wear full face, self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective clothing to prevent contact with skin and eyes.

**Specific Methods:** Use standard firefighting procedures and consider the hazards of other involved materials. Move containers from fire area if you can do so without risk.

### Section 6- ACCIDENTAL RELEASE MEASURES

**Personal Precautions:** Keep unnecessary personnel away. Keep people away from upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Avoid dust formation. Avoid breathing vapors, dust, mist or gas. For personnel protection see Section 8.

**Environmental Precautions:** Avoid discharge into drains, water courses or onto the ground.

**Methods for Containment & Clean Up:**

Large Spills: Stop the flow of material if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use.

For waste disposal see Section 13.

## Section 7- HANDLING AND STORAGE

**Handling:** Avoid contact with eyes, skin and clothing. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.

**Storage:** Store locked up. Store in original tightly closed container. Store away from incompatible materials.

## Section 8- EXPOSURE CONTROLS/PERSONAL PROTECTION

### Exposure Guidelines:

**Occupational Exposure Limits/Components with Workplace Control Parameters:** No exposure limit values noted for substance(s)

**Biological Limit Values:** No biological exposure limits noted for the substance

**Appropriate Engineering Controls:** Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Provide eyewash station and safety shower. Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of the workday. Routinely wash work clothing and protective equipment to remove contaminants. Contaminated work clothing should not be allowed out of the workplace.

### Personal Protective Equipment:

**Eye/Face Protection:** Wear safety glasses with side shields or goggles. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU).

**Skin and Body Protection:** Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Wear appropriate chemical resistant protective clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Respiratory Protection:** In case of insufficient ventilation, wear suitable respiratory equipment. Where protection from nuisance levels of dusts are desired, use type N95 (US) or type P1 (EN 143) dust masks. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

**Thermal Hazards:** Wear appropriate thermal protective clothing when necessary.

**Hygiene Measures:** Handle in accordance with good industrial hygiene and safety practice. When using do not smoke. Keep away from food and drink. Wash thoroughly after handling and before eating, drinking and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Contaminated work clothing should not be allowed out of the workplace.

## Section 9- PHYSICAL AND CHEMICAL PROPERTIES

**Physical State:** Solid

**Odor:** No information available

**Odor Threshold:** No information available

**pH:** No information available

**Melting Point/Range:** No data available

**Boiling Point/Range:** No data available

**Flash Point:** No information available

**Evaporation Rate:** No information available

**Flammability (solid,gas):** No information available

**Flammability or Explosive Limits:**

**Upper:** No data available

**Lower:** No data available

**Vapor Pressure:** No information available

**Vapor Density:** No information available

**Relative Density:** No information available

**Solubility:** No information available

**Partition coefficient; n-octanol/water:** No information available

**Auto Ignition Temperature:** No information available  
**Decomposition Temperature:** No information available  
**Viscosity:** No information available  
**Explosive Properties:** No information available  
**Oxidizing Properties:** No information available

## Section 10- STABILITY AND REACTIVITY

**Reactive Hazard:** Stable and non-reactive under normal conditions of use, storage and transport

**Stability:** Suitable under normal conditions

**Conditions to Avoid:** Contact with incompatible materials

**Incompatible Materials:** Strong oxidizing agents

**Hazardous Decomposition Products:** No information available

**Hazardous Polymerization:** No information available

**Hazardous Reactions:** No information available

## Section 11- TOXICOLOGICAL INFORMATION

### **Information on likely Routes of Exposure:**

**Inhalation:** May cause irritation to the respiratory system

**Skin Contact:** Causes skin irritation

**Eye Contact:** Causes serous eye irritation

**Ingestion:** Expected to be a low ingestion hazard

**Symptoms related to the physical, chemical and toxicological characteristics:** Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling and blurred vision. May cause respiratory irritation. Skin irritation. May cause redness and pain.

### **Information on Toxicological Effects:**

**Acute Toxicity:** No information available

**Skin Corrosion/Irritation:** Causes skin irritation

**Serious eye damage/irritation:** Causes serious eye irritation

**Respiratory or Skin Sensitization:** No information available

**Carcinogenicity:** This product is not considered to be a carcinogen by IARC, NTP or OSHA.

**Germ Cell Mutagenicity:** No information available

**Reproductive Effects:** No information available

**Development Effects:** No information available

**Specific Target Organ Toxicity – single exposure:** May cause respiratory irritation

**Specific Target Organ Toxicity – repeated exposure:** No information available

**Aspiration Hazard:** No information available

**Chronic Effects:** No information available

**-To the best of our knowledge, the chemical, physical and toxicological properties have not been thoroughly investigated.**

## Section 12- ECOLOGICAL INFORMATION

**Toxicity:** The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

**Persistence and Degradability:** No information available

**Bioaccumulation/Accumulation:** No information available

**Mobility in Soil:** No information available

**Results of PBT & vPvB assessment:** PBT/vPvB assessment not available as chemical safety assessment not required/not conducted.

**Other Adverse Effects:** No information available.

### Section 13- DISPOSAL CONSIDERATIONS

**Waste Disposal Methods:** Collect and reclaim or dispose in sealed containers to a licensed disposal company. Dispose of contaminated packaging as unused product. Dispose of contents/container in accordance with local/regional/national/international regulations.

### Section 14- TRANSPORT INFORMATION

**DOT:** Not regulated as dangerous goods

**IATA:** Not regulated as dangerous goods

**IMDG/IMO:** Not regulated as dangerous goods

### Section 15- REGULATORY INFORMATION

**US Federal Regulations:** This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

**TSCA Section 12(b) Export Notification (40 CFR 707, Subpt.D):** Not regulated

**U.S. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052):** Not Listed

**SARA 302 Extremely Hazardous Substance:** No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302

**SARA 304 Emergency Release Notification:** Not regulated

**SARA 313 (TRI Reporting):** This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313

**SARA 311/312 Hazardous Chemical:** No

**CERCLA Hazardous Substance List (40 CFR 302.4):** Not Listed

**Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List:** Not regulated

**Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):** Not regulated

**Safe Drinking Water Act (SDWA):** Not regulated

**US California Proposition 65:** This product does not contain any chemicals known to the State of California to cause cancer, birth defects or any other reproductive harm.

### Section 16- OTHER INFORMATION

The above information is accurate to the best of our knowledge. However, since data, safety standards and government regulations are subject to change, the conditions of handling and use, or misuse are beyond our control, Plasmaterials, Inc. makes no warranty, either expressed or implied, with respect to the completeness or continuing accuracy of the information contained herein and disclaims all liability for reliance thereon. Users should satisfy themselves that they have all current data relevant to their particular use.

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