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SAFETY DATA SHEET

Section 1- IDENTIFICATION		
COMPOSITION NbSe2		PRODUCT NAME Niobium Selenide
SUPPLIER: Plasmaterials, Inc. 2268 Research Drive Livermore, CA 94550 Ph: 925-447-4030	RECOMMENDED USE: Laboratory Chemicals Scientific Research	EMERGENCY TELEPHONE NUMBERS US: 001-800-424-9300 Europe: 001-703-527-3887

Section 2- HAZARD(S) IDENTIFICATION	
HEALTH HAZARDS: -Acute Toxicity (Oral): Category 3 (H301) -Acute Toxicity (Inhalation): Category 3 (H331) -Specific Target Organ Toxicity, Repeated Exposure: Category 2 (H373)	
Environmental Hazards: -Hazardous to the Aquatic Environment, Acute Hazard: Category 1 (H400) -Hazardous to the Aquatic Environment, Long-Term Hazard: Category 1 (H410)	
Physical Hazards: Not Classified	OSHA Defined Hazards: Not Classified
LABEL ELEMENTS: Signal Word: Danger	
	
<u>HAZARD STATEMENTS</u>	
-H301: Toxic if swallowed. -H331: Toxic if inhaled. -H373: May cause damage to organs through prolonged or repeated exposure. -H400: Very toxic to aquatic life -H410: Very toxic to aquatic life with long lasting effects	
<u>PRECAUTIONARY STATEMENTS</u>	
-P260: Do not breathe dust/fume/gas/mist/vapors/spray. -P261: Avoid breathing dust/fume -P264: Wash thoroughly after handling. -P270: Do not eat, drink, or smoke when using this product. -P271: Use only outdoors or in a well-ventilated area. -P273: Avoid release to the environment. -P280: Wear protective gloves/protective clothing/eye protection/face protection. -P301+P310: If swallowed: Immediately call a poison center/doctor. -P304+P340: If inhaled: Remove person to fresh air and keep comfortable for breathing. -P314: Get medical advice/attention if you feel unwell. -P321: Specific treatment (see this label). -P330: Rinse mouth.	

-P391: Collect spillage.
 -P403+P233: Store in a well-ventilated place. Keep container tightly closed.
 -P405: Store locked up.
 -P501: Dispose of contents/container in accordance with local/regional/national/international regulations
Hazards not otherwise classified (HNOC):
 -None identified.

Section 3- COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT	CAS-No	Molecular Weight
Niobium Selenide	12034-77-4	250.83 g/mol

Section 4- FIRST AID MEASURES

GENERAL ADVICE: In case of accident or if you feel unwell, seek medical advice immediately (show label where possible). Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

INHALATION: Remove victim from exposure to fresh air and keep at rest in a position comfortable for breathing. Give oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a poison control center or doctor/physician.

SKIN CONTACT: Wash off with soap and plenty of water. Get medical attention if irritation develops and/or persists.

EYE CONTACT: Do not rub eyes. 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. Get medical attention if irritation develops and/or persists.

INGESTION: Immediately call a poison control center or physician. Rinse mouth. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

MOST IMPORTANT SYMPTOMS/EFFECTS: Prolonged exposure may cause chronic effects.

NOTES TO PHYSICIAN: Provide general supportive measures and treat symptomatically. In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

Section 5- FIREFIGHTING MEASURES

Suitable Extinguishing Media: Water Fog, Foam, Dry Chemical Powder, Carbon Dioxide (CO2)

Unsuitable Extinguishing Media: No information available

Specific Hazards Arising from the Chemical: During fire gases hazardous to health may be formed.

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.

Firefighting Instructions/Specific Methods: Use standard firefighting procedures and consider the hazards of other involved materials. Use water spray to cool unopened containers. Water runoff can cause environmental damage.

General Fire Hazards: No unusual fire or explosion hazards noted.

Section 6- ACCIDENTAL RELEASE MEASURES

Personal Precautions: Immediately evacuate personnel to safe areas. Keep unnecessary personnel away. Wear appropriate protective equipment and clothing during clean-up. Avoid inhalation of dust. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see Section 8 of SDS.

Environmental Precautions: Avoid release to the environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses, or onto the ground. Inform appropriate managerial or supervisory personnel of all environmental releases.

Methods for Containment & Clean Up: Avoid dispersal of dust in the air (i.e., clearing dust with

compressed air). Stop the flow of material if this is without risk. Cover with plastic sheet to prevent spreading. Absorb in vermiculite, dry sand, or earth and place into containers.

- Large Spills: Wet down with water and dike for later disposal. Shovel material into waste container. Prevent entry into waterways, sewer, basements, or confined areas. Following product recovery, flush area with water.
- Small Spills: Sweep up or vacuum up spillage and collect in suitable container for disposal. 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 of SDS.

Section 7- HANDLING AND STORAGE

Handling: Minimize dust generation and accumulation. Avoid breathing dust. Avoid prolonged exposure. Do not taste or swallow. When using do not eat, drink, or smoke. Use only outdoors or in a well-ventilated area. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Avoid release to the environment. Do not empty into drains. Observe good industrial hygiene practices.

Storage: Store locked up. Store in original tightly closed container. Store in a cool, dry place out of direct sunlight. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of SDS)

Section 8- EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines:

Component	CAS-No.	Value	Control Parameters	Basis
Niobium Selenide	12034-77-4	PEL	0.2 mg/m ³	USA. Occupational Exposure Limits OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)
		TWA	0.2 mg/m ³	US ACGIH Threshold Limit Values
		TWA	0.2 mg/m ³	US NIOSH Pocket Guide to Chemical Hazards
		PEL	0.2 mg/m ³	US California Code of Regulations, Title 8, Section 5155, Airborne Contaminants

Biological Limit Values: No biological exposure limits noted for the ingredient(s)

Engineering Measures: Good general ventilation (typically 10 air changes per hour) 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.

Hygiene Measures: Handle in accordance with good industrial hygiene and safety practice. Keep away from food and drink. Wash thoroughly after handling and before eating, drinking and/or smoking. 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 chemical resistant 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 clothing. Use of an impervious apron is recommended. 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 is 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.

Section 9- PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Solid
Appearance: No information available
Odor: No information available
Odor Threshold: No information available
pH: No information available
Melting Point/Range: 1316°C (2401°F)
Boiling Point/Range: No information available
Flash Point: No information available
Evaporation Rate: No information available
Flammability (solid,gas): No information available
Flammability or Exposure Limits:
 Upper: No information available
 Lower: No information 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
Density: 6.3 g/cm³
Specific Gravity: 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: Stable under normal conditions.

Conditions to Avoid: Contact with incompatible materials

Incompatible Materials: None known

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: Toxic if inhaled
Skin Contact: No information available
Eye Contact: No information available
Ingestion: Toxic if swallowed

Symptoms Related to the Physical, Chemical & Toxicological Characteristics: Direct contact with eyes may cause temporary irritation.

Information on Toxicological Effects:

Acute Toxicity: Toxic if swallowed. Toxic if inhaled.
Skin Corrosion/Irritation: No information available
Serious Eye Damage/Eye Irritation: No information available
Respiratory Sensitization: No information available
Skin Sensitization: No information available
Carcinogenicity: This product is not considered to be a carcinogen by IARC, ACGIH, NTP or OSHA.

-IARC Monographs Overall Evaluation of Carcinogenicity: Niobium Selenide (CAS

No. 12034-77-4) – 3 Not classifiable as to carcinogenic to humans

-OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050): Not regulated

-US National Toxicology Program (NTP) Report on Carcinogens: Not listed

Germ Cell Mutagenicity: No information available

Reproductive Toxicity: No information available

Development Toxicity: No information available

Specific Target Organ Toxicity – single exposure: No information available

Specific Target Organ Toxicity – repeated exposure: May cause damage to organs through prolonged or repeated exposure.

Aspiration Hazard: No information available

Chronic Effects: May cause damage to organs through prolonged or repeated exposure.

Prolonged inhalation may be harmful.

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

Section 12- ECOLOGICAL INFORMATION

Toxicity: Very toxic to aquatic life with long lasting effects. Accumulation in aquatic organisms is expected.

Persistence and Degradability: No information available

Bioaccumulation/Accumulation: No information available

Mobility in Soil: No information available

Results of PBT and 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 waste disposal site. This material and its container must be disposed of as hazardous waste. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contaminated packaging as unused product. Dispose of contents/container in accordance with local/regional/national/international regulations.

Section 14- TRANSPORT INFORMATION

DOT:

UN-No: UN3283

Proper Shipping Name: Selenium compound, solid, n.o.s. (Niobium Selenide RQ = 10 LBS)

Transport Hazard Class: 6.1 (PGIII)

Transport Hazard Label: 6.1

Packing Group: III

Special Precautions for User: Read safety instructions, SDS and emergency procedures before handling.



Special Provisions: IB8, IP3, T1, TP33

Packaging Exceptions: 153

Packaging Non-Bulk: 213

Packaging Bulk: 240



<p>IATA:</p> <p>UN-No: UN3283 Proper Shipping Name: Selenium compound, solid, n.o.s. (Niobium Selenide) Transport Hazard Class: 6.1 (PGIII) Packing Group: III Environmental Hazards: No ERG Code: 6L Special Precautions for User: Read safety instructions, SDS and emergency procedures before handling. Passenger and Cargo Aircraft: Allowed with restrictions Cargo Aircraft Only: Allowed with restrictions</p>	
<p>IMDG:</p> <p>UN-No: UN3283 Proper Shipping Name: Selenium compound, solid, n.o.s. (Niobium Selenide) Transport Hazard Class: 6.1 (PGIII) Packing Group: III Environmental Hazards (Marine Pollutant): No EmS: F-A, S-A Special Precautions for User: Read safety instructions, SDS and emergency procedures before handling.</p>	

Section 15- REGULATORY INFORMATION

US Federal Regulations:

All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical Substance Inventory.
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

CERCLA Hazardous Substance List (40 CFR 302.4): Not listed

U.S. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050): Not regulated

SARA Hazard Categories:

Immediate Hazard: Yes

Delayed Hazard: Yes

Fire Hazard: No

Pressure Hazard: No

Reactive Hazard: No

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 311/312 Hazardous Chemical: Yes

SARA 313 (TRI Reporting):

Component	CAS-No	% By Wt
Niobium Selenide	12034-77-4	90-100

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List: Niobium Selenide (CAS No: 12034-77-4)

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

Clean Water Act (CWA) Section 112(r) (40 CFR 68.130): Priority pollutant, Toxic pollutant

Safe Drinking Water Act (SDWA): 0.05 mg/l

US California Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3 subd. (a)): Niobium Selenide (CAS-No: 12034-77-4)

US California Proposition 65: This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

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.

The information in this SDS was obtained from sources, which we believe are reliable. However, the information is provided without any representation or warranty, expressed or implied, regarding the accuracy or correctness.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.

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