Material Safety Data Sheet

Identity: Vanadium
Chemical Family: Group 5 Metal

SECTION I - GENERAL INFORMATION

Manufacturer: Stanford Advanced Materials (SAM)

The information below is believed to be accurate and represents the best information available to SAM. However, SAM makes no warranty, expressed or implied with respect to such information and we assume no liability resulting from its use.

SECTION II - PRODUCT INFORMATION/HAZARDOUS INGREDIENTS

<table>
<thead>
<tr>
<th>Product Name:</th>
<th>Vanadium</th>
<th>CAS #:</th>
<th>7440-62-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Components:</td>
<td>CAS #</td>
<td>Weight %</td>
<td>OSHA/PEL</td>
</tr>
<tr>
<td>Vanadium</td>
<td>7440-62-2</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

SECTION III – PHYSICAL DATA

Boiling Point (0°C): 3380°C  
Density: 
Vapor Pressure: NA  
% Volatile by Vol: Non-volatile 
Evaporation Rate: N/A 
Solubility with H2O: Insoluble  
Melting Point: 1890°C 
Appearance/Odor: Silver gray metal, odorless

SECTION IV - FIRE AND EXPLOSION DATA

Flashpoint: N/A  
Autoignition Temp: ND 
Extinguishing Media: Dry table salt 
Flammable Limits: Solid metal will not burn. Powder can be ignited at 300°C.

Unusual Fire and Explosion Hazards: Hot or burning metals can produce toxic fumes.

SECTION V - HEALTH HAZARD DATA

Routes of Entry: Inhalation, Ingestion, Irritating to Eyes
Emergency and First Aid Procedures
Call a physician immediately.
Ingestion: Induce vomiting. Seek medical attention.
Inhalation: Remove victim to fresh air, administer oxygen, seek medical attention.
Skin: Brush material off skin. Wash affected area with soap and water.
Eyes: Flush eyes with lukewarm water for 15 minutes. Seek medical attention.

SECTION VI – REACTIVITY DATA

Stability: Stable
Conditions to Avoid: None known.
Incompatibility: Strong oxidizing materials, strong acids, chlorine above 180°C
Hazardous Polymerization: Will not occur.
Hazardous Decomposition Products: None

SECTION VII – SPECIAL PRECAUTIONS

Precautions to be taken in Handling and Storage: Store in tightly closed containers in a cool, dry place. Wash hands and face thoroughly.

Steps to be taken in case material is released or spilled: Wearing full protective clothing, isolate area and insure proper ventilation. Vacuum up spill and place in a container for proper disposal. Take care not to raise dust.

Waste Disposal Method: In accordance with Federal, State and Local Regulations.

SECTION VIII – PROTECTIVE EQUIPMENT

Respiratory: approved respiratory Ventilation: Mechanical local exhaust. Gloves:
Recommended Eye and Skin Protections: Safety glasses/side shields.
Other: Maintain sink, safety shower and eyewash fountain in the work area. Wear protective clothing at all times.