MATERIAL SAFETY DATA SHEET

Complies with U.S. OSHA
E.C. Guideline 91/155/EEC:

Revision: 2
Last Revision: July 2004
Replaces: July 2001

EMERGENCY TELEPHONE NUMBERS:
NATIONAL RESPONSE CENTER: 1-800-424-8802
CHEMTREC U.S. and CANADA: 1-800-424-9300
CHEMTREC International: 1-202-483-7616 (Collect)

Users of this product are requested to study this data sheet to learn the product's characteristics so that the product can be used safely. If the material is resold, the purchaser should be furnished a copy of this data sheet and the information should be made available to all users.

SECTION 1
Chemical Product and Company Identification

Product Trade Name — **60% or 80% Ferrovanadium**

Article No. — **V4, V5, V6, V7**

Company Identification

Stratcor, Inc. Tel.: (412) 787-4500
4955 Steubenville Pike, Suite 305 Fax: (412) 787-5030
Pittsburgh, PA 15205-9604; U.S.A.

Inquiry Department

Stratcor, Inc.; Pittsburgh, PA; U.S.A.
Tel.:1-412-787-4500; www.stratcor.com

SECTION 2
Composition and Information on Ingredients

Chemical Characterization:

Chemical Description	**Ferrovanadium**	Silicon	Aluminum
UN Number	**None**	Not Available	Not Available
DOT Guide	**170**	None	None
CAS No.	**12604-58-9**	7440-21-3	7429-90-5
EINECS No.	**Not Listed**	Not Listed	Not Listed
Percentage	**91 to 98%**	1.25% to 6.0%	Less than 1.5%

This substance is an alloy containing ferrovanadium, silicon, aluminum, and other trace metals. None of the ingredients is present in unalloyed form. Silicon and aluminum are listed for clarification purposes only.

SECTION 3
Hazards Identification

Potential Hazards for Humans and Animals:

Eye Contact — Dust may irritate. Chips may cause corneal injury.

Skin Contact — Dust may cause contact dermatitis with itching and rash.

Inhalation — Dust may irritate the respiratory tract and cause coughing and sneezing.

Ingestion — No expected effects.

SECTION 4
First-Aid Measures

General Information:

Inhalation — Leave dusty area. Breathing assistance if necessary.

Skin — Wash with soap and water.

Eye — Flush with water 15 minutes to remove particles. See a physician if irritation persists.

Ingestion — No expected emergency care anticipated.

SECTION 5
Fire-Fighting Measures

Suitable Extinguishing Media	Class D fire. Use dry chemical, completely dry sand, or carbon dioxide to smother.
Extinguishing Media Not to Be Used	Water sprayed on burning material may generate hydrogen gas.
Special Exposure Hazards	Avoid creating dust. Dust may be combustible.
Special Protective Equipment for Fire Fighters	Full protective equipment including positive-pressure breathing apparatus.

SECTION 6
Accidental-Release Measures

Personal Precautions	Skin, eye, and respiratory protection as needed by conditions.
Environmental Precautions	Not an environmentally-sensitive material.
Cleaning Methods	Vacuum preferred – or sweeping.
Additional Information	Avoid decontamination procedures which create airborne dusting. Use ventilation if necessary to control dusting. Avoid use of compressed air. Keep ignition sources away from spill area.

SECTION 7
Handling and Storage

Handling	Avoid procedures that cause dust. Keep away from sparks, heat, and open flame. Chunks may have razor-sharp edges.
Milling	Precautions should be taken when crushing or milling this material to a fine-particle size (nominally less than 200 mesh with over 50% less than 325 mesh). Consideration should be given to performing these operations in an inert atmosphere or under vacuum.
Storage	Material should be kept dry and in closed containers. Keep away from sparks, heat, and open flame in a well-ventilated area away from combustible materials.

SECTION 8
Exposure Controls and Personal Protection

Recommendations on Equipment Designs	Proper dust collection. Minimize dust during dumping operations. Avoid procedures that cause sparks.
Occupational Exposure Limit	1 mg vanadium per cu. m for vanadium alloys (NIOSH). 5 mg per cu. m for Respirable Dust (PNOR)** (OSHA). 15 mg per cu. m for Total Dust (PNOR)** (OSHA). **PNOR = Particulates Not Otherwise Regulated
Personal Safety Equipment:	
Respiratory Protection	Use respirators approved by NIOSH/MSHA or competent local authority.
Hand Protection	Use protective gloves and barrier creams.
Eye Protection	Use face shields, face screens, goggles or safety glasses with side shields.
Skin Protection	Not normally required. Chunks may have razor-sharp edges.
Personal Hygiene	Wash with soap and water after handling and before eating, drinking, or smoking.

SECTION 9

Physical and Chemical Properties

This MSDS reflects available research data and is not a product- or quality-specification document.

Appearance:	
Physical State	Solid.
Form	Lumps, approximately 2 inches x down.
Color	Gray-to-silver black.
Odor	None.
Change in Physical State:	
Melting Point	1540 to 1605°C (2804 to 2922°F).
Boiling Point	Not available.
Vapor Pressure	Essentially zero.
Flash Point	Not applicable.
Flammability	Dust is combustible.
Ignition Temperature	Not applicable.
Auto Flammability	Not applicable.
Oxidizing Properties	None.
Explosive Properties	Dust is combustible.
Bulk Density	3.5 g per cc (220 lb. per cu. ft.)
Solubility in Water (20°C)	Insoluble.
pH Value	Not applicable.

SECTION 10

Stability and Reactivity

Conditions to Avoid	Situations which cause dusting.
Incompatible Materials	Strong acids.
Hazardous Decomposition	None.

SECTION 11

Toxicological Information

Acute Toxicity	Not listed.
Irritation	Mild respiratory irritant. May be a mild skin irritant.
Chronic Toxicity	None noted.
Carcinogen Status:	
IARC	Not listed, International Agency for Research on Cancer
NTP Annual Report	Not listed, National Toxicology Program
OSHA Subpart Z	Not listed.
U.S. EPA Genetic Toxicity	Not listed.
Mutagen Status	Not listed.
Teratogen Status	Not listed.

SECTION 12

Ecological Information

Persistence and Degradability	Will very slowly oxidize to vanadium oxide.
Aquatic Toxicity and Other Data Relating to Ecotoxicity	Not located. This substance is not soluble in water.

SECTION 13

Disposal Considerations

Product Recommendation	This product contains no ingredients which are listed as Hazardous Substances by the U.S. EPA.
Empty-Container Recommendation	This product does not possess characteristics which may qualify as hazardous waste. Waste and containers may be disposed of in accordance with applicable local guidelines. Unused product may be returned to supplier for recycling.

SECTION 14

Transport Information

This product is not identified as a Hazardous Substance.

U.N. packaging requirements shall be met for air and non-U.S. shipments.

Proper Shipping Description	xx% Ferrovanadium Alloy. No special labeling, placarding, or identification is required by any agency.
Empty-Container Description	None required.
Land Transport	U.S. DOT or appropriate local guidelines.
Inland-Waterway Transport	U.S. DOT or appropriate local guidelines.
Ocean Transport	IMO / IMDG Code: Container shipments require a Container Packing Certificate.
Air Transport	ICAO-IT and IATA-DGR: No limit on quantity.

SECTION 15

Regulatory Information

This product is not identified as a Hazardous Substance.

Classification According to U.N. Guidelines	None.
E.C. Danger Symbol	
R-phrases	None.
S-phrases	None.
U.S. EPA TSCA Inventory	Reported in the initial EPA TSCA inventory.
U.S. EPA SARA III Section 302 and 304	Notification may be required. Check local regulations.
U.S. EPA SARA III Section 311 and 312	Notification may be required. Check local regulations.
U.S. EPA SARA III Section 313	Not required.
Non-U.S. Regulations	Refer to specific national guidelines.

SECTION 16

Other Information

Data Sheet Prepared by:

7-1-04

MICHAEL R. WOOLERY

Director of Technology; Hot Springs, Arkansas; U.S.A.

STRATCOR, Inc.

A Subsidiary of Strategic Minerals Corporation

30 Main Street; Danbury, Connecticut 06810

The material difference is value.