



MATERIAL SAFETY DATA SHEET
COMPLIES WITH 29 CFR 1910.1200.
OSHA HAZARD COMMUNICATION RULE

DATE OF LAST REVISION: 01-13-98

CHEMICAL IDENTITY

LABEL IDENTITY		Nickel-Vanadium Alloy		
DESCRIPTION		Nickel based alloy		
FORMULA		Ni-V		
HAZARDOUS INGREDIENTS	CAS NO.	%	OSHA/PEL	ACGIH/TLV
Nickel	7440-02-0	90-98%	1mg/m3	1.5mg/m3
Vanadium	7440-62-2	2-10%	0.5mg/m3	0.5mg/m3

PHYSICAL AND CHEMICAL PROPERTIES

COLOR, FORM AND ODOR	Silvery, white; odorless, metallic solid
BOILING POINT	NA
DENSITY (gm/cc)	NA
VAPOR PRESSURE (mm Hg)	Essentially zero
% VOLATILE BY VOLUME (%)	0
REACTION WITH WATER	ND
EVAPORATION RATE (Butyl Acetate=1)	0
SOLUBILITY IN WATER	Insoluble
FREEZING/MELTING POINT	1700 - 1820° C
SPECIFIC GRAVITY (H ₂ O=1):	ND

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT(°F)	NA
AUTOIGNITION TEMPERATURE (°C)	NA
FLAMMABILITY	NA
EXTINGUISHING MEDIA	Flammable solid in powdered form. If involved in fire, do not use water, CO₂ or halogenated extinguishers. Use dry chemical extinguishing agents, dry sand or dry ground dolomite.
SPECIAL FIRE FIGHTING PROCEDURES	Use normal procedures which include wearing NIOSH/MSHA approved self-contained breathing apparatus, flame and chemical resistant clothing, hats, boots and gloves. If without risk remove material from fire area.
UNUSUAL FIRE & EXPLOSION HAZARDS	Flammable solid in powdered form.



NICKEL VANADIUM ALLOY MATERIAL SAFETY DATA SHEET

HEALTH HAZARD INFORMATION

TOXICITY DATA **No data**

ROUTES OF ENTRY : **None likely**

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:

ACUTE EFFECTS

Ingestion: Absorption of metallic nickel from the gastrointestinal tract is slow, making oral toxicity low. Ingestion of nickel salts, however, may cause vomiting, watery or bloody diarrhea, hemolysis, hematuria, anuria, jaundice, convulsions and collapse.

Skin Contact: May cause “nickel itch” a sensitization reaction causing itching, burning, erythema and eczema.

Eye Contact: Powder or dust may cause irritation.

Inhalation: Powder or dust may cause irritation. Nickel metal is a pulmonary sensitizer.

Other Health Hazards: Metallic vanadium is considered nontoxic, however, vanadium compounds are toxic. Vanadium compounds act chiefly as an irritant to the conjunctivae and respiratory tract. Exposure may cause conjunctivitis, rhinitis and reversible irritation of the bronchospasms and asthma-like diseases.

CHRONIC EFFECTS

Ingestion: None known.

Skin Contact: May cause dermatitis.

Eye Contact: None known.

Inhalation: Studies show an increased incidence of cancer of the nasal cavity, lung and possibly larynx in nickel refinery workers.

Other: Nickel has caused local sarcomas in laboratory animals when given intramuscularly. Vanadium is an experimental tumorigen.



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CARCINOGENICITY: **Metallic nickel is listed as follows:**

NTP: Reasonably anticipated to be carcinogenic: limited evidence from studies in humans or sufficient evidence from studies in experimental animals.

IARC: Possibly carcinogenic to humans: limited evidence in humans in the absence of sufficient evidence in experimental animals.

EPA: Human carcinogen: sufficient evidence from epidemiologic studies to support a casual association between exposure and cancer.

ACGIH: Not suspected as a human carcinogen.

NTP: **Yes** IARC: **Yes** OSHA: **No** EPA: **Yes**

REACTIVITY DATA

STABILITY

Stable

CONDITIONS TO AVOID

Incompatibles

HAZARDOUS DECOMPOSITION PRODUCTS

Oxides of nickel and vanadium.

Contact with mineral acids may liberate hydrogen, a flammable and explosive gas.

Under special conditions, nickel can react with carbon monoxide in reducing atmospheres to form nickel carbonyl, an extremely toxic compound.

HAZARDOUS POLYMERIZATION

Will Not Occur

INCOMPATIBILITY:

For nickel: reacts violently with fluorine, ammonium nitrate, hydrazine, ammonia, hydrogen + dioxane, phosphorous, selenium, sulfur, titanium + potassium perchlorate. Incompatible with oxidizing agents such as bromine pentafluoride, peroxyformic acid, potassium perchlorate, chlorine, nitryl fluoride and ammonium nitrate. Catalysts may initiate hazardous reactions with ethylene + aluminum chloride, p-dioxane, hydrogen, hydrogen + oxygen, magnesium silicate, methanol, organic solvents + heat, and sulfur compounds. Contact with mineral acids may liberate hydrogen, a flammable and explosive gas For vanadium: reacts violently with bromine trifluoride, chlorine (above 180° C), lithium, nitryl fluoride and oxidants.

OTHER: **Nickel catalysts have caused many industrial accidents.**



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SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Wear full protective equipment, cover spill with dry sand or vermiculite. Mix well and carefully transfer to a container.

WASTE DISPOSAL METHOD:

Metal may be recycled. If disposing of metal, follow federal, state and local regulations.

SPECIAL PROTECTIVE INFORMATION

RESPIRATORY PROTECTION

High efficiency particle respirator if exposed to powder/dust.

PROTECTIVE GLOVES

Chemical resistant, impervious, heavy rubber or neoprene.

EYE/FACE PROTECTION

ANSI approved safety goggles.

VENTILATION REQUIREMENTS:

**processes that generate dust, powder or fume
Glove bag or box with a dry inert atmosphere or fine powders. Laboratory fume hood for soiled forms.**

SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING/STORAGE:

Keep container tightly closed. Store in a cool, dry, well-ventilated area. Wash thoroughly after use.

OTHER PRECAUTIONS:

Lab coat and apron, flame and chemical resistant coveralls, eyewash capable of sustained flushing, safety drench shower and hygienic facilities for washing.

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NA= NOT APPLICABLE

ND= NO DATA FOUND

NR=NOT RECORDED