



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

**DATE OF LAST REVISION: 02-19-09**

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## CHEMICAL IDENTITY

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LABEL IDENTITY	<b>VANADIUM OXIDE</b>
CHEMICAL NAME/SYNONYMS	<b>VANADIUM PENTOXIDE, VANADIC ANHYDRIDE</b>
FORMULA	<b>V2O5</b>
CHEMICAL FAMILY	<b>METAL OXIDE</b>
HAZARDOUS INGREDIENTS	<b>VANADIUM OXIDE</b>
%: <b>100</b> CAS: <b>1314-62-1</b> TLV: <b>0.05 mg/m3</b> OSHA/PEL: <b>0.5 mg/m3</b>	

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## PHYSICAL AND CHEMICAL PROPERTIES

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COLOR, FORM AND ODOR	<b>Yellow to rust colored powder, odorless</b>
BOILING POINT	<b>Loses O2 over 700, decomposes at 1750</b>
DENSITY (gm/cc)	<b>3.357</b>
VAPOR PRESSURE @ 20°	<b>NA</b>
% VOLATILE BY VOLUME (%)	<b>NA</b>
REACTION WITH WATER	<b>None</b>
EVAPORATION RATE (H2O=1)	<b>NA</b>
SOLUBILITY IN WATER	<b>1g/125ml H2O</b>
MELTING POINT	<b>690</b>
OTHER	<b>Oxidizer, slightly hygroscopic</b>

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## FIRE AND EXPLOSION HAZARD DATA

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FLASH POINT	<b>NA</b>
AUTOIGNITION TEMPERATURE (° C)	<b>NA</b>
FLAMMABILITY	<b>Non-flammable</b>
EXTINGUISHING MEDIA	<b>Use dry chemical, CO<sub>2</sub></b>
SPECIAL FIRE FIGHTING PROCEDURES	<b>Wear a self-contained breathing apparatus and full protective clothing to prevent contact with skin and eyes.</b>
UNUSUAL FIRE & EXPLOSION HAZARDS	<b>May increase combustion rate. Material emits acrid smoke and fumes of VOx when heated to decomposition</b>

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## HEALTH HAZARD INFORMATION

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TOXICITY DATA:	ihl-hmn TCLO: 346mg/m3: PUL	ihl-hmn TCLO: 1mg/m3/8H: ALR
	orl-rat LD50: 10mg/kg	ihl-rat LCLO: 70mg/kg
	ipr-rat LD50: 12mg/kg	scu-rat LD50: 14mg/kg
	itr-rat LDLO: 25mg/kg	scu-mus LD50: 10mg/kg
	ihl-cat LCLO: 500mg/m3/23M	scu-rbt LDLO: 20mg/kg
	ivn-rbt LDLO: 10mg/kg	scu-gpg LDLO: 20mg/kg



## VANADIUM OXIDE (PENTOXIDE) MATERIAL SAFETY DATA SHEET

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### HEALTH HAZARD INFORMATION

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HMIS RATING:

HEALTH: **3\*** FLAMMABILITY: **1** REACTIVITY: **1** PERSONAL PROTECTION: **J**

ROUTES OF ENTRY

INHALATION: **Yes**  
SKIN: **Yes**  
INGESTION: **Yes**

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: **Primarily Respiratory Disorders**

EFFECTS OF OVEREXPOSURE (acute and chronic):

INHALATION: **Symptoms include respiratory irritation, heavy coughing, sneezing, shortness of breath, chest pain, bronchitis. Some symptoms may be delayed 6-24 hrs. Rales and ronchui may also occur.**

DERMAL: **May cause papular skin rash, extremely irritating to skin, burns possible.**

EYE: **Extremely irritating, watering, burning sensation.**

INGESTION: **Pallor, greenish-black tongue, palpitation, diarrhea, nausea, vomiting, convulsions, limb paralysis, salivation. Chronic exposure to vanadium compounds may cause chronic bronchitis, emphysema, pulmonary edema, allergic eczema, liver and kidney damage, blood changes, conjunctivitis and loss of appetite.**

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CARCINOGENICITY: **None** NTP: **No** IARC MONOGRAPHS: **NO** OSHA REGULATE: **NO**

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EMERGENCY FIRST AID PROCEDURES: *(seek immediate medical attention for all of the following)*

INGESTION: **Administer 1-2 cups of water or milk and induce vomiting**

INHALATION: **Remove to fresh air & administer oxygen if breathing is difficult**

SKIN CONTACT: **Wash affected area with mild soap and water**

EYE CONTACT: **Flush eyes for at least 15 minutes with lukewarm water**

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### REACTIVITY DATA

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STABILITY

**Stable**

CONDITIONS CONTRIBUTING TO UNSTABILITY

**None**

INCOMPATIBILITY (MATERIALS TO AVOID)

**Ca+S+H2O, ClF3, Li, organics, peroxyformic acid, easily oxidizable materials**

HAZARDOUS DECOMPOSITION PRODUCTS

**VOx**

HAZARDOUS POLYMERIZATION

**Will Not Occur**

CONDITIONS TO AVOID

**Incompatible materials**



## VANADIUM OXIDE (PENTOXIDE) MATERIAL SAFETY DATA SHEET

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### SAFE HANDLING AND USE

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STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: **Wear self-contained breathing apparatus and full protective clothing. Isolate the area where the spill occurred and insure that proper ventilation is available and that water/moisture is kept out of the area. Vacuum up spill using a high efficiency unit and place in a container for proper disposal. Take care not to raise dust.**

WASTE DISPOSAL METHOD: **Consult federal, state and local regulations for proper disposal.**

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### SPECIAL PROTECTIVE INFORMATION

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RESPIRATORY PROTECTION	<b>NIOSH approved dust-mist-fume respirator</b>
LOCAL EXHAUST	<b>Maintain below TLV</b>
MECHANICAL (general)	<b>Recommended</b>
SPECIAL	<b>NA</b>
OTHER	<b>NA</b>
PROTECTIVE GLOVES	<b>Neoprene</b>
EYE PROTECTION	<b>Safety goggles</b>
OTHER PROTECTIVE EQUIPMENT	<b>Wear protective apparel to prevent skin and clothing contamination</b>

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### SPECIAL PRECAUTIONS

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PRECAUTIONS TO BE TAKEN IN HANDLING/STORAGE:

**Store in cool, dry location away from incompatible materials. Wash hands and face thoroughly after handling and before eating. Keep containers closed, as V2O5 will absorb some moisture from the air.**

TRANSPORTATION REQUIREMENTS	DOT CLASS:	<b>Poison</b>
	UN NUMBER:	<b>2862</b>
	IMCO CLASS:	<b>6.1</b>
	OTHER:	<b>---</b>

PRECAUTIONARY LABELING **NONE**

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NA= NOT APPLICABLE

ND= NO DATA FOUND