

OVERVIEW		
Full Name	Vanadium (None)	
Symbol	V	
Atomic Number	23	
Series	Transition Metal	
Block / Group / Period	d-block Group 5 Period 4	
Electron Config.	[Ar]4s23d3	
Phase at STP	Solid	
Colour	Silver	
Discovery	1801 in Mexico and Sweden	
THERMAL PROPERTIES		
Melting Point	1910 °C	°C
Melting Point (abs.)	2183 K	K
Boiling Point	3407 °C	°C
Boiling Point (abs.)	3680 K	K
Heat of Fusion	22.8 kJ/mol	kJ/mol
Heat of Vaporization	453 kJ/mol	kJ/mol
Specific Heat (solid)	489 J/(kg K)	J/(kg·K)
Thermal Conductivity	31 W/(m K)	W/(m·K)
Thermal Expansion	8.4×10 ⁻⁶ K ⁻¹	K ⁻¹
MECHANICAL PROPERTIES		
Density (solid, STP)	6.11 g/cm ³	g/cm ³
Density (liquid, MP)	5.5 g/cm ³	g/cm ³
Young's Modulus	128 GPa	GPa
Shear Modulus	47 GPa	GPa
Bulk Modulus	160 GPa	GPa
Poisson's Ratio	0.37	
Speed of Sound	4560 m/s	m/s
Mohs Hardness	7	
Vickers Hardness	628 MPa	MPa
Brinell Hardness	628 MPa	MPa
ELECTRICAL PROPERTIES		
Type	Conductor	
Conductivity	5×10 ⁶ S/m	S/m
Resistivity	2×10 ⁻⁷ m ?	Ohm·m
Superconducting Pt.	5.4	K
MAGNETIC PROPERTIES		
Type	Paramagnetic	
Vol. Susceptibility	0.0003837	
Mass Susceptibility	6.28×10 ⁻⁸ m ³ /Kg	m ³ /kg
REACTIVITY		
Valence	5	
Electronegativity	1.63	(Pauling)
Electron Affinity	50.6 kJ/mol	kJ/mol
Ionization Energies	650.9, 1414	kJ/mol
ATOMIC DIMENSIONS		
Atomic Radius	171 pm	pm
Covalent Radius	153 pm	pm
CRYSTAL STRUCTURE		
Structure	Body-centered Cubic	
Lattice Constant	303, 303, 303 pm	pm
Space Group	Im_3m	#229
ISOTOPES & NUCLEAR		
Stability	Stable	
Stable Isotopes	51V	
Isotopic Abundance	50V0.25%51V99.75%	
Known Isotopes	40V ■ 65V (26 total)	
Neutron Cross Sect.	5.06	barns
ELEMENTAL ABUNDANCES		
Universe	0.0001%	%
Earth's Crust	0.019%	%
Oceans	1.5×10 ⁻⁷ %	%
Human Body	3×10 ⁻⁶ %	%
HEALTH & SAFETY		
DOT Hazard Class	4.1	
NFPA Health/Fire/Rx	0 / 0 / 0	