

## OVERVIEW

Full Name	Rhenium (None)
Symbol	Re
Atomic Number	75
Series	Transition Metal
Block / Group / Period	d-block   Group 7   Period 6
Electron Config.	[Xe]6s24f145d5
Phase at STP	Solid
Colour	Gray
Discovery	1925 in Germany

## THERMAL PROPERTIES

Melting Point	3186 °C	°C
Melting Point (abs.)	3459 K	K
Boiling Point	5596 °C	°C
Boiling Point (abs.)	5869 K	K
Heat of Fusion	33 kJ/mol	kJ/mol
Heat of Vaporization	705 kJ/mol	kJ/mol
Specific Heat (solid)	137 J/(kg K)	J/(kg·K)
Thermal Conductivity	48 W/(m K)	W/(m·K)
Thermal Expansion	6.2×10 <sup>-6</sup> K <sup>-1</sup>	K <sup>-1</sup>

## MECHANICAL PROPERTIES

Density (solid, STP)	21.02 g/cm <sup>3</sup>	g/cm <sup>3</sup>
Density (liquid, MP)	18.9 g/cm <sup>3</sup>	g/cm <sup>3</sup>
Young's Modulus	463 GPa	GPa
Shear Modulus	178 GPa	GPa
Bulk Modulus	370 GPa	GPa
Poisson's Ratio	0.3	
Speed of Sound	4700 m/s	m/s
Mohs Hardness	7	
Vickers Hardness	2450 MPa	MPa
Brinell Hardness	1320 MPa	MPa

## ELECTRICAL PROPERTIES

Type	Conductor	
Conductivity	5.6×10 <sup>6</sup> S/m	S/m
Resistivity	1.8×10 <sup>-7</sup> m ?	Ohm·m
Superconducting Pt.	1.7	K

## MAGNETIC PROPERTIES

Type	Paramagnetic	
Vol. Susceptibility	0.0000959	
Mass Susceptibility	4.56×10 <sup>-9</sup> m <sup>3</sup> /Kg	m <sup>3</sup> /kg

## REACTIVITY

Valence	7	
Electronegativity	1.9	(Pauling)
Electron Affinity	14.5 kJ/mol	kJ/mol
Ionization Energies	760, 1260	kJ/mol

## ATOMIC DIMENSIONS

Atomic Radius	188 pm	pm
Covalent Radius	151 pm	pm

## CRYSTAL STRUCTURE

Structure	Simple Hexagonal	
Lattice Constant	276.1, 276.1, 445.6 pm	pm
Space Group	P63/mmc	#194

## ISOTOPES &amp; NUCLEAR

Stability	Stable	
Stable Isotopes	185Re	
Isotopic Abundance	185Re37.4%187Re62.6%	
Known Isotopes	160Re ■ 194Re (35 total)	
Neutron Cross Sect.	90	barns

## ELEMENTAL ABUNDANCES

Universe	2×10 <sup>-8</sup> %	%
Earth's Crust	2.6×10 <sup>-7</sup> %	%
Oceans	1×10 <sup>-10</sup> %	%

## HEALTH &amp; SAFETY

RTECS Number	VI0780000
NFPA Health/Fire/Rx	0 / 0 / 0