Rhenium, Annealed | MECHANICAL AND PHYSICAL PROPERTIES

	Metric	English
Physical Properties		
Density	21.03 g/cc	0.7598 lb/in^3
Molar mass	186.207 g/mol	
Melting Point	3,182°C	5,759°F
Boiling Point	5,597°C	10,110°F
Chemical Properties		
Atomic Number	75	75
Thermal Neutron Cross Section	86 barns/atom	86 barns/atom
X-ray Absorption Edge	0.17311 Å	0.17311 Å
	0.99009 Å	0.99009 Å
	1.03645 Å	1.03645 Å
	1.1772 Å	1.1772 Å
Electronegativity	1.9	1.9
Ionic Radius	0.560 Å	0.560 Å
	0.720 Å	0.720 Å
Mechanical Properties		
Hardness, Brinell	165	165
Hardness, Rockwell A	52	52
Hardness, Rockwell B	85	85
Hardness, Vickers	170	170
Tensile Strength, Ultimate	1070 MPa	155000 psi
	410 MPa	59500 psi
	@Temperature 1200 °C	@Temperature 2190 °F
	620 MPa	89900 psi
	@Temperature 800 °C	@Temperature 1470 °F
Tensile Strength, Yield	290 MPa	42100 psi
Elongation at Break	15 - 25 %	15 - 25 %
Modulus of Elasticity	469 GPa	68000 ksi
Poissons Ratio	0.296	0.296
Shear Modulus	176 GPa	25500 ksi

References

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The Metals Databook, Alok Nayer, McGraw-Hill, New York, 1997.

CRC Handbook of Chemistry and Physics, David R. Lide, Ed. 80th Edition, CRC Press, Boca Raton, FL, 1999.

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Electrical Properties		
Electrical Resistivity	0.0000193 ohm-cm	0.0000193 ohm-cm
	@Temperature 20.0 °C	@Temperature 68.0 °F
	0.0000254 ohm-cm	0.0000254 ohm-cm
	@Temperature 100 °C	@Temperature 212 °F
	0.0000400 ohm-cm	0.0000400 ohm-cm
	@Temperature 300 °C	@Temperature 572 °F
	0.0000526 ohm-cm	0.0000526 ohm-cm
	@Temperature 500 °C	@Temperature 932 °F
	0.0000630 ohm-cm	0.0000630 ohm-cm
	@Temperature 700 °C	@Temperature 1290 °F
	0.0000725 ohm-cm	0.0000725 ohm-cm
	@Temperature 900 °C	@Temperature 1650 °F
	0.0000805 ohm-cm	0.0000805 ohm-cm
	@Temperature 1100 °C	@Temperature 2010 °F
	0.0000870 ohm-cm	0.0000870 ohm-cm
	@Temperature 1300 °C	@Temperature 2370 °F
	0.0000930 ohm-cm	0.0000930 ohm-cm
	@Temperature 1500 °C	@Temperature 2730 °F
	0.0000985 ohm-cm	0.0000985 ohm-cm
	@Temperature 1700 °C	@Temperature 3090 °F
	0.000103 ohm-cm	0.000103 ohm-cm
	@Temperature 1900 °C	@Temperature 3450 °F
	0.0001065 ohm-cm	0.0001065 ohm-cm
	@Temperature 2100 °C	@Temperature 3810 °F
	0.000109 ohm-cm	0.000109 ohm-cm
	@Temperature 2300 °C	@Temperature 4170 °F
Magnetic Susceptibility	3.63E-07	3.63E-07
Critical Magnetic Field Strength, Oersted	195 - 205	195 - 205
Critical Superconducting Temperature	1.691 - 1.703 K	1.691 - 1.703 K
Thermal Properties		
Heat of Fusion	178 J/g	76.6 BTU/lb
CTE, linear	6.12 µm/m-°C	3.40 µin/in-°F
	@Temperature 500 °C	@Temperature 932 °F
	6.20 µm/m-°C	3.44 µin/in-°F
	@Temperature 20.0 °C	@Temperature 68.0 °F
	6.20 µm/m-°C	3.44 µin/in-°F
	@Temperature 250 °C	@Temperature 482 °F
	6.65 µm/m-°C	3.69 µin/in-°F
	@Temperature 1000 °C	@Temperature 1830 °F
Specific Heat Capacity	0.134 J/g-°C	0.0320 BTU/lb-°F
	@Temperature 500 °C	@Temperature 932 °F
	0.138 J/g-°C	0.0330 BTU/lb-°F
	@Temperature 25.0 °C	@Temperature 77.0 °F
	0.150 J/g-°C	0.0359 BTU/lb-°F
	@Temperature 1000 °C	@Temperature 1830 °F
	0.161 J/g-°C	0.0385 BTU/lb-°F
	@Temperature 1000 °C	@Temperature 1830 °F
	0.177 J/g-°C	0.0423 BTU/lb-°F
	@Temperature 1500 °C	@Temperature 2730 °F
	0.199 J/g-°C	0.0476 BTU/lb-°F
	@Temperature 2000 °C	@Temperature 3630 °F
Thermal Conductivity	39.6 W/m-K	275 BTU-in/hr-ft^2-°F
Melting Point	3180 °C	5760 °F
Maximum Service Temperature, Inert	2380 °C	4320 °F