W-3 Re Tungsten-Rhenium Alloy | MECHANICAL AND PHYSICAL PROPERTIES

	Metric	English
Physical Properties		
Density	19.55 g/cc	0.7063 lb/in^3
Mechanical Properties		
Tensile Strength, Ultimate	1242 - 2208 MPa	180100 - 320200 psi
Elongation at Break	10%	10%
Modulus of Elasticity	403 GPa	58500 ksi
Electrical Properties		
Electrical Resistivity	0.00000914 ohm-cm	0.00000914 ohm-cm
Thermal Properties		
Melting Point	3360 °C	6080 °F
Component Elements Properties		
Rhenium, Re	3.00%	3.00%
Tungsten, W	97%	97%

W-5 Re Tungsten-Rhenium Alloy | MECHANICAL AND PHYSICAL PROPERTIES

	Metric	English
Physical Properties		
Density	19.57 g/cc	0.7070 lb/in^3
Mechanical Properties		
Tensile Strength, Ultimate	1380 - 2208 MPa	200000 - 320200 psi
Elongation at Break	10%	10%
Modulus of Elasticity	405 GPa	58700 ksi
Poissons Ratio	0.3	0.3
Shear Modulus	156 GPa	22600 ksi
Electrical Properties		
Electrical Resistivity	0.00001163 ohm-cm	0.00001163 ohm-cm
Thermal Properties		
Melting Point	3350 °C	6060 °F
Component Elements Properties		
Rhenium, Re	5.00%	5.00%
Tungsten, W	95%	95%

References

Materials Handbook, 2nd Ed, Francois Cardarelli, Springer-Verlag, London, 2008.

W-25 Re Tungsten-Rhenium Alloy, Annealed | MECHANICAL AND PHYSICAL PROPERTIES

	Metric	English
Physical Properties		
Density	19.7 g/cc	0.712 lb/in^3
Mechanical Properties		
Tensile Strength, Ultimate	1370 MPa	199000 psi
Elongation at Break	20%	20%
Modulus of Elasticity	430 GPa	62400 ksi
Poissons Ratio	0.29	0.29
Shear Modulus	159 GPa	23100 ksi
Electrical Properties		
Electrical Resistivity	0.0000290 ohm-cm	0.0000290 ohm-cm
Critical Superconducting Temperature	4.20 K	4.20 K
Thermal Properties		
CTE, linear	4.48 µm/m-°C	2.49 µin/in-°F
	@Temperature 500 °C	@Temperature 932 °F
	5.04 µm/m-°C	2.80 µin/in-°F
	@Temperature 1000 °C	@Temperature 1830 °F
Specific Heat Capacity	0.140 J/g-°C	0.0335 BTU/lb-°F
	0.156 J/g-°C	0.0373 BTU/lb-°F
	@Temperature 1000 °C	@Temperature 1830 °F
Melting Point	3050 °C	5520 °F
Component Elements Properties		
Rhenium, Re	25%	25%
Tungsten, W	75%	75%

W-26 Re Tungsten-Rhenium Alloy | MECHANICAL AND PHYSICAL PROPERTIES

	Metric	English
Physical Properties		
Density	19.7 g/cc	0.712 lb/in^3
Mechanical Properties		
Tensile Strength, Ultimate	1517 MPa	220000 psi
Elongation at Break	10%	10%
Thermal Properties		
Melting Point	3120 °C	5650 °F
Maximum Service Temperature, Air	2760 °C	5000 °F
Minimum Service Temperature, Air	0.000 °C	32.0 °F
Component Elements Properties		
Rhenium, Re	26%	26%
Tungsten, W	74%	74%
Descriptive Properties		
Junction Polarity	N	
Thermoelectric Power (µV/K)	16.7	

References

Materials Handbook, 2nd Ed, Francois Cardarelli, Springer-Verlag, London, 2008.

RHENIUM ALLOYS®