

Reference Data

Physical Properties of the Platinum Metals

	Platinum	Iridium	Osmium	Palladium	Rhodium	Ruthenium
Atomic number...	78	77	76	46	45	44
Atomic weight ...	195.23	193.1	190.2	106.7	102.91	101.7
Lattice structure	F.c. cube	F.c. cube	C.p. hex	F.c. cube	F.c. cube	C.p. hex
Lattice constants, a c	3.92 —	3.83 —	2.72 4.314	3.88 —	3.80 —	2.70 4.27
Density at 20°C	21.4	22.4	22.5	11.9	12.4	12.3
Melting point, °C	1769	2442	> 2550	1552	1960	> 2550
Thermal conductivity, C.G.S. units ...	0.17	0.35	—	0.17	0.36	—
Specific heat, cal/gm/°C at 20°C	0.032	0.032	0.031	0.058	0.059	0.031
Coefficient of linear expansion (0-100°C) ...	8.9×10^{-6}	6.5×10^{-6}	6.6×10^{-6}	11.7×10^{-6}	8.5×10^{-6}	9.6×10^{-6}
Resistivity, microhm-centimetres at 20°C	10.6	5.3	9.5	10.7	4.7	9.5
Temperature coefficient of resistance (0-100°C) ...	0.0039	0.004	0.0042	0.0038	0.0046	0.0042
Mass susceptibility	$+1.10 \times 10^{-6}$	$+0.15 \times 10^{-6}$	$+0.05 \times 10^{-6}$	$+5.4 \times 10^{-6}$	$+1.11 \times 10^{-6}$	$+0.50 \times 10^{-6}$
Thermionic functions, A , amp. $\text{cm}^{-2}(\text{°K})^{-2}$...	32	—	—	60	33	—
ϕ , volts (work function) ...	5.32	5.40	—	4.99	4.80	—
Tensile strength—annealed—tons/in ² ...	10	16	—	10	24	—
Limit of proportionality—annealed—tons/in ² ...	2	—	—	2	—	—
Elongation—annealed—per cent ...	40	—	—	40	5	—
Modulus of elasticity in tension, lb/in ² ...	22×10^6	74×10^6	—	16×10^6	40×10^6	—
Hardness—annealed—V.P.H.	40	220	350	40	100	240