

METALS/SINGLE ELEMENTS

METALS						
MATERIAL	FORMULA	STANDARD PURITIES	THEORETICAL DENSITY g/cm³	LISTED MELTING POINT, °C	*FABRICATION METHOD	SUGGESTED APPLICATIONS
Aluminum	Al	99.99 – 99.999	2.70	660	1	Conductive film in IC's. High reflectivity front surface mirrors and reflectors on glass. In oxidized form, interference filters.
Antimony	Sb	99.5 – 99.999	6.62	630.5	1-2	Semiconducting films.
Bismuth	Bi	99.5 - 99.999	9.80	271.3	1-2	Ferromagnetic and resistive thin films
Boron	B	90.-92, 94-96, 99.5	2.34	2030	2	Semiconductor. Diffusion layer.
Cadmium	Cd	99.5 - 99.999	8.65	320.9	1-2	Dielectric thin film. For metallizing paper, etc.
Chromium	Cr	99.8 - 99.95	7.19	1875	1-2-3	Excellent adhering film on numerous substrates. Deposit on glass for printed circuit base. Co-deposit with SiO for resistor films.
Cobalt	Co	99.9	8.90	1495	1-2	Ferromagnetic thin films.
Copper	Cu	99.9 - 99.999	8.96	1083	1	Junction films in integrated circuits. Contacts
Germanium	Ge	99.999 – 99.9999	5.32	937.4	1	High index film in infrared filters.
Gold	Au	99.9 - 99.999	19.30	1063	1	Contacts. Highly reflecting films.
Graphite	C	99.5 -99.9	2.26	3727	2	Lubricant film. Semiconductor applications
Hafnium	Hf	99.9 excl. Zr	13.10	2222	1	Dielectric. Interference layers.

Indium	In	99.9 - 99.999	7.31	156.2	1	Superconducting films. Transistor contacts, diodes.
Iron	Fe	99.9	7.86	1536	1-2	Magnetic and memory elements. Ferromagnetic thin films.
Lead	Pb	99.999	11.40	327.4	1	Semiconducting films. Cryogenic applications
Magnesium	Mg	99.9 - 99.99	1.74	651.0	2	Diffusion with bismuth on glass to form ferromagnetic films
Manganese	Mn	99.95	7.43	1245	2	Contacts for semiconductors. Adherence film
Molybdenum	Mo	99.95	10.20	2610	1-2	Contacts. Hard, smooth film. Multilayer circuits.
Nickel	Ni	99.9, 99.97, 99.99, 99.995	8.90	1453	1	Ferromagnetic films. Memory elements.
Niobium	Nb	99.9	8.40	2468	1-2	Anodic films for rectification.
Palladium	Pd	99.9 - 99.95	12.00	1552	1	Corrosion resistant contacts.
Platinum	Pt	99.9 - 99.95	21.45	1769	1	Corrosion resistant. Co evaporate with Si
Rare Earth	-	99.9 exc. Ta	varies	Varies	1	Misc. applications.
Rhenium	Re	99.99	20.53	3180	2	Contacts.
Ruthenium	Ru	99.9	12.20	2500	2	Corrosion resistant contacts
Selenium	Se	99.999	4.50	220	1	Photoconductive and rectifier films
Silicon	Si	99.999 dope/undoped	2.33	1410	1	Mechanical and chemical resistant coating. Interference filter
Silver	Ag	99.99	10.50	960.8	1	Reflective film. Conductive contact. Bonding layer.
Tantalum	Ta	99.95	16.60	2996	1	Superconductor. Thin film capacitor
Tellurium	Te	99.5, 99.95, 99.99	6.25	452	2	Blocking contact in thin film devices.

Tin	Sn	99.999	7.30	231.9	1	Cryogenic switching devices
Titanium	Ti	99.9	4.51	1668	1	Deposited film oxidized to TiO ₂ as beam splitter or insulator.
Tungsten	W	99.95	19.30	3410	2	Contacts. Hard, adherent film
Vanadium	V	99.5 -99.7	5.96	1900	1-2	Co-evaporate with SiO for resistor films.
Zinc	Zn	99.9 – 99.999	7.14	419.5	1	Capacitor dielectric films. For metalizing paper, etc.
Zirconium	Zr	99.9 excl. Hf	6.49	1852	1	Interference filter. On tungsten field emitters to alter emission characteristics.
						* Fabrication Methods: (1) Vacuum or air-vacuum melted, then rolled and cut if required.(2) Hot-pressed or fabricated through special press-sinter process. (3) Vacuum hot-pressed or forged.