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LIST OF MATERIALS

SUPPORTED SYSTEMS: Airco Solar, Airco Temescal, Alactel/Comtech, Anelva, Angstrom Sciences, Applied Materials, Balzers, BOC, Bosch Engineering, CHA, Commonwealth, CPA, CVC, Edwards, Gryphon, Innotec, Ion Tech, Korea Vacuum, Kurdex, Kurt J. Lesker Company, Leybold, MARKIV, MDC, MRC(except inset), Nordiko, Perkin-Elmer, Sloan, Sun Source, Telemark, Thermionics, Ulvac, Unaxis, U.S., Inc., Varian(except ConMagII) Veeco, and Customer Designed.

MATERIALS	COMPOSITION	SPUTTERING TARGETS	ELECTRON-BEAM SOURCES	EVAPORATION MATERIALS	PURITIES (%)
METALS					
Aluminum	Al	•	•	•	99.99-99.9999%
Antimony	Sb	•	•	•	99.999-99.99999%
Arsenic	As			•	99,99.999%
Barium	Ba	•		•	99.8%
Beryllium	Be	•	•	•	98-99.9%
Bismuth	Bi	•	•	•	99.9,99.999%
Boron	B		•	•	99.5%
Cadmium	Cd	•	•	•	99.999%
Calcium	Ca			•	99.5%
Carbon(Graphite)	C	•	•		99.999%
Cerium	Ce	•		•	99.9%
Cesium	Cs			•	99.95%
Chromium	Cr	•	•	•	99.98%
Cobalt	Co	•	•	•	99.9%
Copper	Cu	•	•	•	99.99,99.999%
Dysprosium	Dy			•	99.9%
Erbium	Er			•	99.9%
Europium	Eu			•	99.9%
Gadolinium	Gd			•	99.9%
Gallium	Ga			•	99.999,99.9999%
Germanium	Ge	•	•	•	99.999%
Gold	Au	•	•	•	99.99,99.999%
Hafnium	Hf	•	•	•	99.9%
Holmium	Ho			•	99.9%
Indium	In	•	•	•	99.99-99.9999%
Iridium	Ir	•	•	•	99.8%
Iron	Fe	•	•	•	99.9,99.95%
Lanthanum	La			•	99.9%
Lead	Pb	•	•	•	99.995%
Magnesium	Mg	•	•	•	99.9,99.98%

MATERIALS	COMPOSITION	SPUTTERING TARGETS	ELECTRON-BEAM SOURCES	EVAPORATION MATERIALS	PURITIES (%)
METALS(Cont.)					
Manganese	Mn	•	•	•	99.95%
Molybdenum	Mo	•	•	•	99.95%
Neodymium	Nd	•	•	•	99.9%
Nickel	Ni	•	•	•	99.7,99.995%
Niobium	Nb	•	•	•	99.95%
Palladium	Pd	•	•	•	99.95%
Platinum	Pt	•	•	•	99.99%
Praseodymium	Pr			•	99.9%
Rhenium	Re		•	•	99.9%
Rhodium	Rh	•	•	•	99.8%
Rubidium	Rb			•	99.8%
Ruthenium	Ru	•	•		99.95%
Samarium	Sm			•	99.9%
Scandium	Sc			•	99.9%
Selenium	Se	•	•	•	99.999-99.9999%
Silicon	Si	•	•	•	99.999%
Silicon(P doped)	Si(150ppmP)	•	•	•	99.999%
Silicon(B doped)	Si(350ppmB)	•	•	•	99.999%
Silver	Ag	•	•	•	99.99%
Stainless Steel	SS	•	•		304,316
Strontium	Sr			•	99.5%
Tantalum	Ta	•	•	•	99.95%
Tellurium	Te	•	•	•	99.999%
Terbium	Tb			•	99.9%
Thallium	Tl			•	99.999%
Thorium	Th			•	99.8%
Thulium	Tm			•	99.9%
Tin	Sn	•	•	•	99.999%
Titanium	Ti	•	•	•	99.7-99.995%
Tungesten	W	•	•	•	99.95%
Vanadium	V	•	•	•	99.5%
Ytterbium	Yb			•	99.9%
Yttrium	Y	•	•	•	99.9%
Zinc	Zn	•	•	•	99.99,99.995%
Zirconium	Zr	•	•	•	99.7%
ALLOYS					
Aluminum-Chromium	$(Al)x(Cr)_{1-x}$	•	•	•	99.99%
Aluminum-Cobalt	$(Al)x(Co)_{1-x}$	•	•	•	99.95%
Aluminum-Copper	$(Al)x(Cu)_{1-x}$	•	•	•	99.9-99.9999%
Aluminum-Iron	$(Al)x(Fe)_{1-x}$	•	•	•	99.99%
Aluminum-Silicon	$(Al)x(Si)_{1-x}$	•	•	•	99.9-99.9999%
Aluminum-Silicon-Copper	(Al)x(Si)y(Cu)z	•	•	•	99.9-99.9999%

MATERIALS	COMPOSITION	SPUTTERING TARGETS	ELECTRON-BEAM SOURCES	EVAPORATION MATERIALS	PURITIES (%)
ALLOYS(Cont.)					
Aluminum-Titanium	$(Al)_{50}(Ti)_{50}$	•	•	•	99.95%
Chromium-Silicon-Monoxide	$(Cr)_x(SiO)_{1-x}$	•	•	•	99.9%
Chromium-Nickel	$(Cr)_x(Ni)_{1-x}$	•	•	•	99.9%
Chromium-Cobalt	$(Cr)_x(Co)_{1-x}$	•	•	•	99.5%
Chromium-Cobalt-Nickel	$(Cr)_x(Co)_y(Ni)_z$	•	•	•	99.5%
Cobalt-Nickel	$(Co)_x(Ni)_{1-x}$	•	•	•	99.5%
Iron-Nickel(Permalloy)	$(Fe)_{19}(Ni)_{81}$	•	•	•	99.95%
Indium-Tin	$(In)_x(Sn)_{1-x}$	•	•	•	99.99,99.999%
Nickel-Vanadium	(NiV)	•	•	•	99.95%
Titanium-Tungsten	$(Ti)_{10}(W)_{90}$	•	•	•	99.99%
Titanium-Tungsten	$(Ti)_{15}(W)_{85}$	•	•	•	99.99%
SUPERCONDUCTING ALLOYS					
Yttrium-Barium-Copper Oxide	1-2-3	•			99.9-99.999%
Bismuth-Calcium-Strontium-Copper Oxide	2-2-2-3	•			99.9-99.999%
Bismuth-Lead-Calcium-Strontium-Copper-Oxide	1.94-0.06-2-2-3	•			99.9-99.999%
Thallium-Barium-Calcium-Copper Oxide	2-2-2-3	•			99.9-99.999%
Erbium-Barium-Copper Oxide	1-2-3	•			99.9-99.999%
BORIDES					
Aluminum Boride	AlB_2	•	•	•	99%
Chromium Boride	CrB_2	•	•	•	99.5%
Halfnium Boride	HfB_2	•	•	•	99.5%
Lanthanum Boride	LaB_6	•	•	•	99.5%
Molybdenum Boride	Mo_2B_5,MoB_2	•	•	•	99.5%
Niobium Boride	NbB_2	•	•	•	99.5%
Tantalum Boride	TaB_2	•	•	•	99.5%
Titanium Boride	TiB_2	•	•	•	99.5%
Tungsten Boride	WB,W_2B	•	•	•	99.5%
Vanadium Boride	VB_2	•	•	•	99.5%
Zirconium Boride	ZrB_2	•	•	•	99.5%

MATERIALS	COMPOSITION	SPUTTERING TARGETS	ELECTRON-BEAM SOURCES	EVAPORATION MATERIALS	PURITIES (%)
CARBIDES					
Boron Carbide	B_4C	•	•	•	99.5%
Chromium Carbide	Cr_3C_2	•	•	•	99.5%
Hafnium Carbide	HfC	•	•	•	99.5%
Molybdenum Carbide	MoC	•	•	•	99.5%
Niobium Carbide	NbC	•	•	•	99.5%
Silicon Carbide	SiC	•	•	•	99.5%
Tantalum Carbide	TaC	•	•	•	99.5%
Titanium Carbide	TiC	•	•	•	99.5%
Tungsten Carbide	WC	•	•	•	99.95%
Vanadium Carbide	VC	•	•	•	99.5%
Zirconium Carbide	ZrC	•	•	•	99.5%
FLUORIDES					
Aluminum Fluoride	AlF_3	•	•	•	99.9%
Barium Fluoride	BaF_2	•	•	•	99.9%
Calcium Fluoride	CaF_2	•	•	•	99.95%
Cerium Fluoride	CeF_3	•	•	•	99.9%
Lanthanum Fluoride	LaF_3	•	•	•	99.9%
Lead Fluoride	PbF_2	•	•	•	99.9%
Lithium Fluoride	LiF	•	•	•	99.9%
Magnesium Fluoride	MgF_2	•	•	•	99.9%
Sodium Fluoride	NaF	•	•	•	99.9%
Thorium Fluoride	ThF_4	•	•	•	99.9%
Yttrium Fluoride	YF_3	•	•	•	99.9%
NITRIDES					
Aluminum Nitride	AlN	•	•	•	99.8%
Boron Nitride	BN	•	•	•	99.99%
Hafnium Nitride	HfN	•	•	•	99.5%
Niobium Nitride	NbN	•	•	•	99.5%
Silicon Nitride	Si_3N_4	•	•	•	99.9%
Tantalum Nitride	TaN	•	•	•	99.5%
Titanium Nitride	TiN	•	•	•	99.5%
Vanadium Nitride	VN	•	•	•	99.5%
Zirconium Nitride	ZrN	•	•	•	99.5%
OXIDES					
Aluminum Oxide	Al_2O_3	•	•	•	99.99%
Antimony Oxide	Sb_2O_3	•	•	•	99.99%
Barium Titanate	$BaTiO_3$	•	•	•	99.9%
Beryllium Oxide	BeO			•	99.5%

MATERIALS	COMPOSITION	SPUTTERING TARGETS	ELECTRON-BEAM SOURCES	EVAPORATION MATERIALS	PURITIES (%)
OXIDES(Cont.)					
Barium Oxide	BaO, BaO_2	•	•	•	99,99.5%
Bismuth Oxide	Bi_2O_3	•	•	•	99.99%
Bismuth Titanate	$BiTiO_3$	•	•	•	99.9%
Cerium Oxide	CeO_2	•	•	•	99.99%
Chromium Oxide	Cr_2O_3	•	•	•	99.8%
Copper Oxide	CuO	•	•	•	99.7%
Dysprosium Oxide	Dy_2O_3			•	99.9%
Erbium Oxide	Er_2O_3			•	99.9%
Europium Oxide	Eu_2O_3			•	99.5%
Gallium Oxide	Ga_2O_3			•	99.999%
Germanium Oxide	GeO_2			•	99.999%
Hafnium Oxide	HfO_2	•	•	•	99.95%
Holmium Oxide	Ho_2O_3	•	•	•	99.9%
Indium Oxide	In_2O_3	•	•	•	99.99%
Indium Tin Oxide	$(In_2O_3)x(SnO_2)_{1-x}$		•	•	99.99%
Indium Zinc Oxide	$(In_2O_3)x(ZnO)_{1-x}$			•	99.99%
Iron Oxide	Fe_2O_3, Fe_2O_4	•	•	•	99.5-99.9%
Lanthanum Oxide	La_2O_3			•	99.99%
Lead Titanate	$PbTiO_3$	•	•	•	99.9%
Magnesium Oxide	MgO	•	•	•	99.95%
Manganese Oxide	MnO, MnO_2, Mn_2O_3	•	•	•	99.9%
Molybdenum Oxide	MoO_2, MoO_3	•	•	•	99.9%
Neodymium Oxide	Nd_2O_3			•	99.9%
Nickel Oxide	NiO	•	•	•	99.995%
Niobium Oxide	Nb_2O_5	•	•	•	99.95%
Praseodymium Oxide	Pr_2O_3	•	•	•	99.9%
Samarium Oxide	Sm_2O_3	•	•	•	99.9%
Silicon Dioxide	SiO_2	•	•	•	99.995%
Silicon Monoxide	SiO	•	•	•	99.9%
Strontium Oxide	SrO_2	•	•	•	99.5%
Strontium Titanate	$SrTiO_3$	•	•	•	99.9%
Tantalum Oxide	Ta_2O_5	•		•	99.9%
Thorium Oxide	ThO_2			•	99.9%
Tin Oxide	SnO_2	•	•	•	99.9%
Tin Oxide-Antimony Oxide	SnO_2-Sb_2O_3	•	•	•	99.9%
Titanium Oxide	TiO_2, Ti_2O_3	•	•	•	99.9%
Tungsten Oxide	WO_3	•	•	•	99.9%
Yttrium Oxide	Y_2O_3	•	•	•	99.99%
Zinc Oxide	ZnO	•	•	•	99.9,99.99%
Zirconium Oxide	ZrO_2	•	•	•	99.9%
SELENIDES					
Cadmium Selenide	CdSe	•	•	•	99.995%

MATERIALS	COMPOSITION	SPUTTERING TARGETS	ELECTRON-BEAM SOURCES	EVAPORATION MATERIALS	PURITIES (%)
SELENIDES(Cont.)					
Lead Selenide	PbSe	•	•	•	99.95%
Molybdenum Selenide	$MoSe_2$	•	•	•	99.9%
Niobium Selenide	$NbSe_2$	•	•	•	99.8%
Tantalum Selenide	$TaSe_2$	•	•	•	99.4%
Tungsten Selenide	WSe_2	•	•	•	99.8%
Zinc Selenide	ZnSe	•	•	•	99.99%
SILICIDES					
Aluminum Silicide	$AlSi_2$			•	99.5%
Chromium Silicide	$CrSi_2$, Cr_3Si	•	•	•	99.5%
Cobalt Silicide	$CoSi_2$	•	•	•	99.5%
Hafnium Silicide	$HfSi_2$	•	•	•	99.5%
Iron Silicide	$FeSi_2$	•	•	•	99.5%
Molybdenum Silicide	$MoSi_2$	•	•	•	99.5%
Niobium Silicide	$NbSi_2$, Nb_5Si_3	•	•	•	99.5%
Tantalum Silicide	$TaSi_2$, $TaSi_3$	•	•	•	99.5%
Titanium Silicide	$TiSi_2$, Ti_5Si_2, Ti_5Si_3	•	•	•	99.95%
Tungsten Silicide	WSi_2	•	•	•	99.95%
Vanadium Silicide	VSi_2, V_3Si	•	•	•	99.5%
Zirconium Silicide	$ZrSi_2$	•	•	•	99.5%
SULFIDES					
Cadmium Sulfide	CdS	•	•	•	99.99%
Indium Sulfide	In_2S_3	•	•	•	99.99%
Lead Sulfide	PbS	•	•	•	99.9%
Molybdenum Sulfide	MoS_2	•	•	•	99%
Tantalum Sulfide	TaS_2	•	•	•	99.9%
Tungsten Sulfide	WS_2	•	•	•	99.8%
Zinc Sulfide	ZnS	•	•	•	99.99%
Zirconium Sulfide	ZrS_2	•	•	•	99.9%
TELLURIDES					
Cadmium Telluride	CdTe	•	•	•	99.99%
Lead Telluride	PbTe	•	•	•	99.99%
Molybdenum Telluride	$MoTe_2$	•	•	•	99.9%
Niobium Telluride	$NbTe_2$	•	•	•	99.8%
Tantalum Telluride	$TaTe_2$	•	•	•	99.8%
Tungsten Telluride	WTe_2	•	•	•	99.8%
Zinc Telluride	ZnTe	•	•	•	99.99%

OUR PRODUCT LINE IS ALWAYS EXPANDING. IF YOU REQUIRE A MATERIAL THAT IS NOT LISTED, PLEASE CONTACT YOUR PLASMATERIALS SALES ENGINEER FOR FURTHER INFORMATION.

Metal	Symbol	Atomic Weight	Atomic Radius (Å)	Melting Point (℃)	Density g/cc	Density $^{-}$lbs./in^2	Modulus Of Elasticity (10^6PSI)	Electrical Resistivity μ-ohm-m	Thermal Conductivity cal-cm/cm^2-sec℃	Coeff.of Thermal Exp. (cm/cm℃)x10^6
ALUMINUM	AL	26.98	1.43	660	2.699	.9810	10	26.55	.53	23.6
CHROMIUM	CR	52.10	1.25	1875	7.19	.259	36	130	.16	6.2
COPPER	CU	63.54	1.28	1083	8.96	.323	17	16.73	.94	16.5
GERMANIUM	GE	72.60	1.11	937	5.32	.192	23	.45$_{ohmm}$	.14	5.7
GOLD	AU	197.00	1.44	1063	19.32	10.166*	11.6	23.5	.71	14.2
INDIUM	IN	114.82	1.57	156	7.32	.263	1.3	80**	.057	33.0
MOLYBDENUM	MO	95.95	1.36	2610	10.22	.369	47	52**	.34	4.9
NICKEL	NI	58.71	1.25	1453	8.90	.322	30	68.44	.22	13.3
PALLADIUM	PD	106.7	1.37	1552	12.02	6.293*	16.3	108	.17	11.7
PLATINUM	PT	195.09	1.38	1769	21.45	11.287*	21.3	106	.16	8.9
SILVER	AG	107.88	1.44	961	10.49	5.527*	11	14.7**	1.0	19.6
TANTALUM	TA	180.95	1.43	2996	16.6	.601	27	135	.13	6.5
TIN	SN	118.70	1.509***	232	7.9	.258	6	155	.15	23.0
TITANIUM	TI	47.90	1.47	1668	4.51	.163	16.8	420	.22	8.4
ZINC	ZN	65.38	1.33	419	7.13	.258	13.4	59.16	.27	39.7
ZIRCONIUM	ZR	91.22	1.58	1852	6.49	.234	13.7	450	.21	5.8

*to/in^3

**@0℃

***Lattice Parameters vary with structure

Plasmaterials offers a full range of sputtering targets and bonding services.

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