

Alloys Intermetallics

Alloys Intermetallics applications include conductor contacts in microcircuits, thin film resistors for integrated circuits, magnetic films, thin film resistors, diffusion barriers and others

MATERIAL	FORMULA	PURITY	TH. DENSITY, g/cm ³	LISTED MELTING POINT, °C	FAB. METHOD	SUGGESTED APPLICATIONS * 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.
Aluminum-copper	Al - xCu	99.99 99.999	ca. 2.7	ca. 660	1	Conductor contacts in microcircuits.
Aluminum-silicon	Al- xSi	99.99 99.999	ca. 2.7	ca. 660	1	Conductor contacts in microcircuits.
Aluminum-silicon-copper	Al - xSi - yCu	99.99 99.999	ca. 2.7	ca. 660	1	Conductor contacts in microcircuits..
Chromium-silicon monoxide	70 wt. Cr - 30 wt. SiO	99.9	4.20		2	Excellent thin film resistors for integrated circuits.
Chromium-silicon monoxide	60 wt. Cr - 40 wt. SiO	99.9	3.69		2	Excellent thin film resistors for integrated circuits.
Chromium-silicon monoxide	50 wt. Cr- 50 wt. SiO	99.9	3.29	varies	2	Excellent thin film resistors for integrated circuits.
Cobalt-iron	xCo - yFe	99.9	varies	varies	1&2	Magnetic films.
Cobalt-nickel	xCo - yNi	99.9	8.90	ca. 1475	1&2	Magnetic films.
Gallium arsenide	GaAs	99.999	5.3	1240	2	Magnetic films.
Gallium phosphide	GaP	99.999	4.14	1480	2	Semiconductors.
Inconel	ca. 78 wt. Ni - 15 wt. Cr -7 wt. Fe	99.5	8.51	1425	1	Good corrosion resistance. Thin film resistors. Good film adherence
Indium antimonide	InSb	99.999	5.8	523	2	Semiconductors.
Indium arsenide	InAs	99.999	5.66	943	2	Masers. Coherent emission

						from diffused diodes
Indium phosphide	InP	99.999	4.79	1058@21 atm	2	Semiconductors.
Indium-tin	xIn - ySn	99.99 99.999	7.3	varies	1	Oxidize to give transparent, conductive films.
Manganese-iron	xMn - yFe	99.9	varies	varies	2	Magnetic films.
Manganese-nickel	xMn - yNi	99.9	varies	Varies	2	Magnetic films.
Nickel-chromium	x wt. Ni - Y wt. Cr	99.9	7.96 - 8.48	1340-1675	1&2	Thin film resistors. Good adhererice on non-metals. Good corrosion resistance.
Nickel-iron	xTb - yFe	99.9	8	1473	1&2	Thin films for magnetic heads. Bubble memory devices.
Nickel-titanium	xNi-YFe	99.9	varies	varies	1&2	A "shape memory" alloy.
Nickel-vanadium	93/7 Wt Ni/V	99.7	8.60	Ca. 1450	1&2	Used in circuits; vanadium renders nickel non-magnetic.
Niobium-titanium	xNB-yTi	99.9	varies	varies	2	Proprietary electronic uses.
Niobium-zirconium	xNb-yZr	99.9	varies	varies	2	Proprietary electronic uses.
Permalloy	Ca. 79/16.7/4/0.3 wt Ni/Fe/Mo/Mn	99.5	Ca. 8.74		1&2	Thin films for magnetic heads. Bubble memory devices.
Terbium-iron	81/19 wt Ni/Fe	99.9	varies	varies	2	Magneto-optic, sensitive to light changing flux fields
Tungsten-titanium	90wt.% W-10%.wt% Ti	99.995 (Na<1 ppm)	14.6	1860	2	Diffusion barriers, primarily between Pt silicide contacts and other interconnect.
Tungsten-titanium	90wt.% W-10%.wt% Ti	99.9 (Na: 300-500 ppm)	14.6	1860	2	Diffusion barriers, primarily between Pt silicide contacts and other interconnect.
Tungsten-titanium	90wt.% W-10%.wt% Ti	99.9 (Na<10 ppm)	14.6	1860	2	Diffusion barriers, primarily between Pt silicide contacts and other interconnect.

Vanadium-aluminum	xV - yAl	99.9	varies	varies	2	Proprietary electronic uses.
Zirconium-aluminum	xZr - yAl	99.5	varies	varies	2	Proprietary electronic uses.