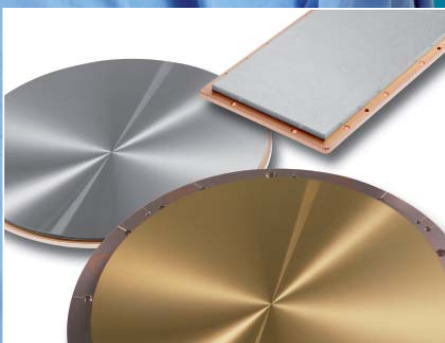


Sputtering Targets for Semiconductor Applications



Umicore Thin Film Products

Umicore Thin Film Products, a globally active business unit within the Umicore Group, is one of the leading producers of coating materials for physical vapor deposition with more than 50 years experience in this field. Its Semiconductors portfolio covers a wide range of highly effective sputtering targets and evaporation materials.

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About Sputtering Targets for Semiconductors

Semiconductors and electronics play a major role in our world. Just about everything from consumer goods, transportation, housing and manufacturing infrastructure, to large area information systems is based on such technologies.

Umicore Thin Film Products (TFP) successfully develops, manufactures, sells and recycles high quality coating materials for thin film applications in the advanced packaging, compounds, microsystems, and silicon front end segments.

Due to our longstanding experience and strong cooperation with OC Oerlikon (formerly Unaxis and Balzers), our targets and evaporation materials are optimized for maximum performance in OC Oerlikon coating systems.

As an industry leader, Umicore Thin Film Products also provides sputtering targets and evaporation materials to a wide selection of other coating systems. Target size and microstructure are designed to serve the latest sputtering equipment for 300 mm wafer technology.

Our international sales network ensures close co-operation to ensure efficient customer specific solutions and on-time delivery of our products.

Umicore – A world leader in material technology

Umicore is a materials technology group. Its activities are centred on four business areas: Advanced Materials, Precious Metals Products and Catalysts, Precious Metals Services and Zinc Specialties. Each business area is divided into market-focused business units.

Umicore focuses on application areas where it knows its expertise in materials science, chemistry and metallurgy can make a real difference, be it in products that are essential to everyday life or those at the cutting edge of new technological developments. Umicore's overriding goal of sustainable value creation is based on this ambition to develop, produce and recycle materials in a way that fulfils its mission: **materials for a better life.**

The Umicore Group has industrial operations on all continents and serves a global customer base.

Advanced Packaging	WTi10, Au, NiV7, Ni, Ti, Cu, Cr, Al
Compounds	Al, Al-alloys, Ni-alloys, Pt, Au-alloys, Cr, Cu, Ti, W, TCO's, and more
Microsystems	Ta, Ni-alloys, SiO ₂ , Al, Zn, and more
Silicon Front End	Al, Al-alloys, Cr, Cu, Ni-alloys, Ta, Ti, WTi, Au, Pt, Ag, and more



Sputtering Targets suitable for OC Oerlikon, Unaxis, and Balzers Sputtering Systems

Sputtering Targets ARQ151-6"

Description	Symbol	Purity	Form	Part Number
Aluminum	Al	5N5 (99.9995%)	18 mm compound	0483150
AlSi1	AlSi1	5N5 (99.9995%)	18 mm compound	0483305
AlCu0.5	AlCu0.5	5N5 (99.9995%)	18 mm compound	0483273
AlSi1Cu0.5	AlSi1Cu0.5	5N5 (99.9995%)	18 mm compound	0483306
Copper	Cu	4N5 (99.995%)	15 mm monoblock	0483283
Chromium	Cr	3N5 (99.95%)	15 mm monoblock	0483282
Gold (4100 g)	Au	4N (99.99%)	10 mm compound	0483133
Nickel	Ni	3N5 (99.95%)	9 mm compound	0483161
NiCr20	NiCr20	3N (99.9%)	15 mm monoblock	0706549
NiV7	NiV7	3N5 (99.95%)	15 mm monoblock	0483085
Platinum (4550 g)	Pt	4N (99.99%)	15 mm compound	0485189
Silver (5020 g)	Ag	4N (99.99%)	15 mm compound	0900142
Tantalum	Ta	4N (99.99%)	15 mm compound	0485106
Titanium	Ti	3N (99.9%)	15 mm monoblock	0483162
Titanium	Ti	4N5 (99.995%)	15 mm monoblock	0483274
Tungsten	W	3N5 (99.95%)	15 mm compound	0485170
WTi10	WTi10	4N5 (99.995%)	15 mm compound	0483255

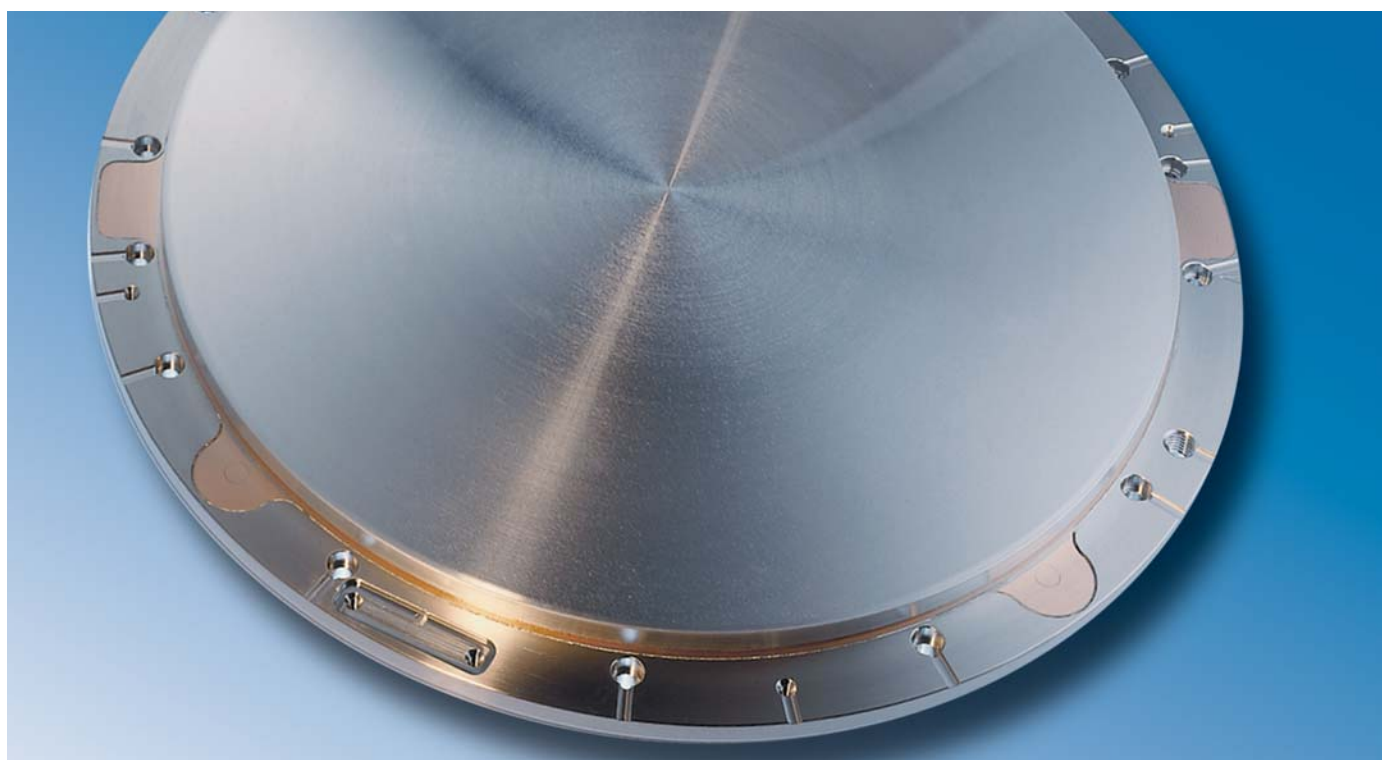
Sputtering Targets ARQ151-8"

Description	Symbol	Purity	Form	Part Number
Aluminum	Al	5N5 (99.9995%)	18 mm compound	0483159
AlSi1	AlSi1	5N5 (99.9995%)	18 mm compound	0483331
AlCu0.5	AlCu0.5	5N5 (99.9995%)	18 mm compound	0483332
AlSi1Cu0.5	AlSi1Cu0.5	5N5 (99.9995%)	18 mm compound	0483333
Chromium	Cr	3N5 (99.95%)	15 mm monoblock	0483334
Copper	Cu	4N5 (99.995%)	15 mm monoblock	0483335
Gold (5460 g)	Au	4N (99.99%)	10 mm compound	0483343
Molybdenum	Mo	3N5 (99.95%)	15 mm compound	0485201
Nickel	Ni	3N5 (99.95%)	9 mm compound	0485190
NiCr20	NiCr20	3N (99.9%)	15 mm monoblock	0706975
NiV7	NiV7	3N5 (99.95%)	15 mm monoblock	0483347
Palladium (3400 g)	Pd	3N5 (99.95%)	10 mm compound	0483138
Platinum (6050 g)	Pt	4N (99.99%)	15 mm compound	0485154
Silver (6680 g)	Ag	4N (99.99%)	15 mm compound	0900041
Tantalum	Ta	4N (99.99%)	15 mm compound	0485107
Titanium	Ti	3N (99.9%)	15 mm monoblock	0483090
Titanium	Ti	4N5 (99.995%)	15 mm monoblock	0483340
Tungsten	W	3N5 (99.95%)	15 mm compound	0705354
WTi10	WTi10	4N5 (99.995%)	15 mm compound	0483339

Sputtering Targets ARQ300

Description	Symbol	Purity	Cooling Plate	Form	Part Number
Aluminum	Al	5N5 (99.9995%)	0483054	12 mm bonded on cooling plate	0483113
AlCu0.5	AlCu0.5	5N5 (99.9995%)	0483054	12 mm bonded on cooling plate	0706455
AlSi1Cu0.5	AlSi1Cu0.5	5N5 (99.9995%)	0483054	12 mm bonded on cooling plate	0703596
Copper	Cu	4N5 (99.995%)	0483054	12 mm bonded on cooling plate	0483114
Chromium	Cr	3N5 (99.95%)	0483054	12 mm bonded on cooling plate	0703532
Gold (9710 g)	Au	4N (99.99%)	0483056	4 mm bonded on cooling plate	0483123
Nickel	Ni	3N5 (99.95%)	0483054	7 mm bonded on cooling plate	0703707
NiV7	NiV7	3N5 (99.95%)	0483054	12 mm bonded on cooling plate	0483115
Tantalum	Ta	4N (99.99%)	0483056	4 mm bonded on cooling plate	0703063
Titanium	Ti	4N5 (99.995%)	0483054	12 mm bonded on cooling plate	0483116
Tungsten	W	3N5 (99.95%)	0483056	4 mm bonded on cooling plate	0703075
WTi10	WTi10	4N5 (99.995%)	0483054	12 mm bonded on cooling plate	0483118
Cooling plate for	12 mm target			with transportation box	0483054
Cooling plate for	6 mm target			with transportation box	0706960
Cooling plate for	4 mm target			with transportation box	0483056
Transportation box					0483057

Other materials available upon request.



Sputtering Targets suitable for OC Oerlikon, Unaxis, and Balzers Sputtering Systems

Sputtering Targets AKQ515

Description	Symbol	Purity	Form	Suitable for cathode			Mounting method		Part Number
				Regular	High energy	High energy, central fixation	C	D	
Aluminum	Al	5N5 (99.9995%)	12 mm monoblock	●			●		0483433
Aluminum	Al	5N5 (99.9995%)	12 mm monoblock			●	●		0483433-V03
Aluminum	Al	5N5 (99.9995%)	12 mm compound		●		●		0485095
AlSi1	AlSi1	5N5 (99.9995%)	12 mm monoblock	●			●		0483434
AlSi1	AlSi1	5N5 (99.9995%)	12 mm monoblock			●	●		0483434-V03
AlCu4	AlCu4	5N5 (99.9995%)	12 mm monoblock	●			●		0483440
AlCu4	AlCu4	5N5 (99.9995%)	12 mm monoblock			●	●		0483440-V03
AlSi1Cu0.5	AlSi1Cu0.5	5N5 (99.9995%)	12 mm monoblock	●			●		0483076
AlSi1Cu0.5	AlSi1Cu0.5	5N5 (99.9995%)	12 mm monoblock			●	●		0483076-V03
AlSi1Cu0.5	AlSi1Cu0.5	5N5 (99.9995%)	12 mm compound		●		●		0485122
Chromium	Cr	3N5 (99.95%)	12 mm compound	●			●		0485144
Chromium	Cr	3N5 (99.95%)	12 mm monoblock	●	●			●	0483078
Copper	Cu	4N5 (99.995%)	12 mm monoblock	●	●		●		0483428
Gold (2805 g)	Au	4N (99.99%)	6 mm compound	●			●		0483172
Gold (5605 g)	Au	4N (99.99%)	12 mm compound	●			●		0483176
Molybdenum	Mo	3N5 (99.95%)	12 mm compound	●			●		0483435
Molybdenum	Mo	3N5 (99.95%)	12 mm monoblock	●	●			●	0704792
Nickel	Ni	3N5 (99.95%)	8.5 mm monoblock	●				●	0483444
NiCr20	NiCr20	3N (99.9%)	12 mm compound	●			●		0483443
NiCr20	NiCr20	3N (99.9%)	12 mm monoblock	●	●			●	0706479
NiFe17	NiFe17	3N (99.9%)	6 mm compound	●			●		0483445
NiFe19	NiFe19	3N (99.9%)	6 mm compound	●			●		0483430
NiFe55	NiFe55	3N (99.9%)	5.5 mm compound	●			●		0483476
NiV7	NiV7	3N5 (99.95%)	12 mm monoblock	●	●		●		0483869
Niobium	Nb	2N6 (99.6%)	12 mm compound	●			●		0485136
Palladium (1745 g)	Pd	3N5 (99.95%)	6 mm compound	●			●		0483089
Palladium (3490 g)	Pd	3N5 (99.95%)	12 mm compound	●			●		0483442
Platinum (3200 g)	Pt	3N5 (99.95%)	6 mm compound	●			●		0483097
Platinum (3200 g)	Pt	4N (99.99%)	6 mm compound	●			●		0483100
Quarz	SiO2	4N (99.99%)	10 mm compound	●	●		●		0483147
Silicon	Si	5N (99.999%)	12 mm compound	●	●		●		0483864
Silver	Ag	4N (99.99%)	12 mm compound	●	●		●		0485153
Tantalum	Ta	4N (99.99%)	12 mm compound	●	●		●		0485177
Titanium	Ti	3N (99.9%)	12 mm compound	●			●		0483429
Titanium	Ti	3N (99.9%)	12 mm monoblock	●	●			●	0483075
Titanium	Ti	4N5 (99.995%)	12 mm compound	●			●		0483154
Titanium	Ti	4N5 (99.995%)	12 mm monoblock	●	●			●	0483080
Tungsten	W	3N5 (99.95%)	12 mm compound	●			●		0483436
WTi10	WTi10	4N (99.99%)	12 mm compound	●			●		0700146
WTi10	WTi10	4N5 (99.995%)	12 mm compound	●			●		0483843
WTi10	WTi10	4N5 (99.995%)	12 mm compound		●		●		0703751

Sputtering Targets suitable for Balzers Sputtering Systems

Sputtering Targets AK510

Description	Symbol	Purity	Form	Cooling type		Mounting method			Part Number
				Indirect cooling	Direct cooling	A	B	C	
Aluminum	Al	5N5 (99.9995%)	12 mm monoblock	●			●		0483750
AlSi1	AlSi1	5N5 (99.9995%)	12 mm monoblock	●			●		0483770
Chromium	Cr	3N5 (99.95%)	12 mm compound	●	●	●			0483551
Copper	Cu	4N5 (99.995%)	12 mm monoblock	●	●	●			0483540
Molybdenum	Mo	3N5 (99.95%)	12 mm compound	●	●	●			0483670
Nickel	Ni	3N5 (99.95%)	8 mm compound	●		●			0483560
Silicon	Si	5N (99.999%)	12 mm compound	●	●		●		0483687
Tantalum	Ta	3N5 (99.95%)	12 mm compound	●	●	●			0483696
Titanium	Ti	3N (99.9%)	12 mm compound	●	●	●			0483740
Tungsten	W	3N5 (99.95%)	12 mm compound	●	●	●			0483698
WTi10	WTi10	4N5 (99.995%)	12 mm compound	●			●		0483533

Sputtering Targets AK517

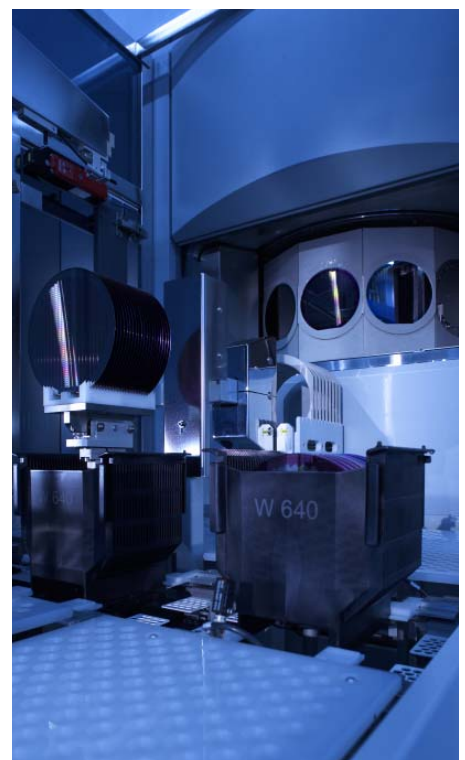
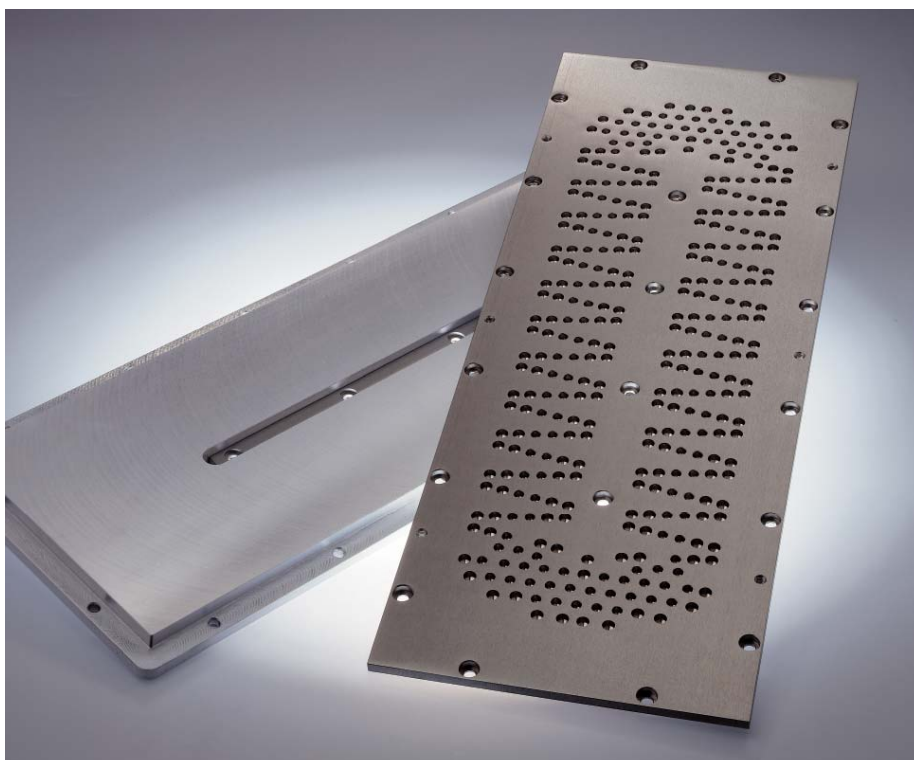
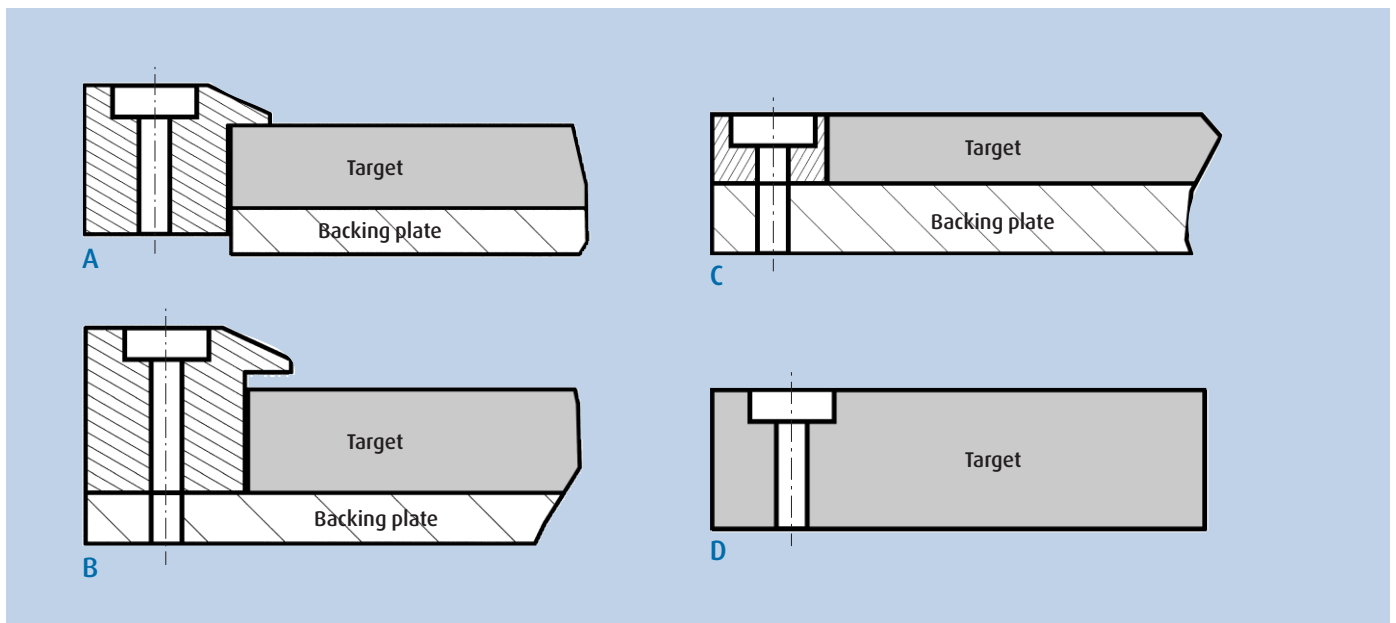
Aluminum	Al	5N5 (99.9995%)	12 mm monoblock	●			●		0483832
AlSi1	AlSi1	5N5 (99.9995%)	12 mm monoblock	●			●		0483837
Chromium	Cr	3N5 (99.95%)	9 mm compound	●		●			0483554
Copper	Cu	4N5 (99.995%)	12 mm monoblock	●		●			0483543
Molybdenum	Mo	3N5 (99.95%)	9 mm compound	●		●			0483678
Nickel	Ni	3N5 (99.95%)	8 mm compound	●		●			0483568
Silicon	Si	5N (99.999%)	9 mm compound	●	●		●		0483689
Tantalum	Ta	4N (99.99%)	9 mm compound	●		●			0483697
Titanium	Ti	3N (99.9%)	12 mm compound	●		●			0483748
Tungsten	W	3N5 (99.95%)	9 mm compound	●		●			0483699
WTi10	WTi10	4N5 (99.995%)	12 mm compound	●			●		0483535

Sputtering Targets AK618

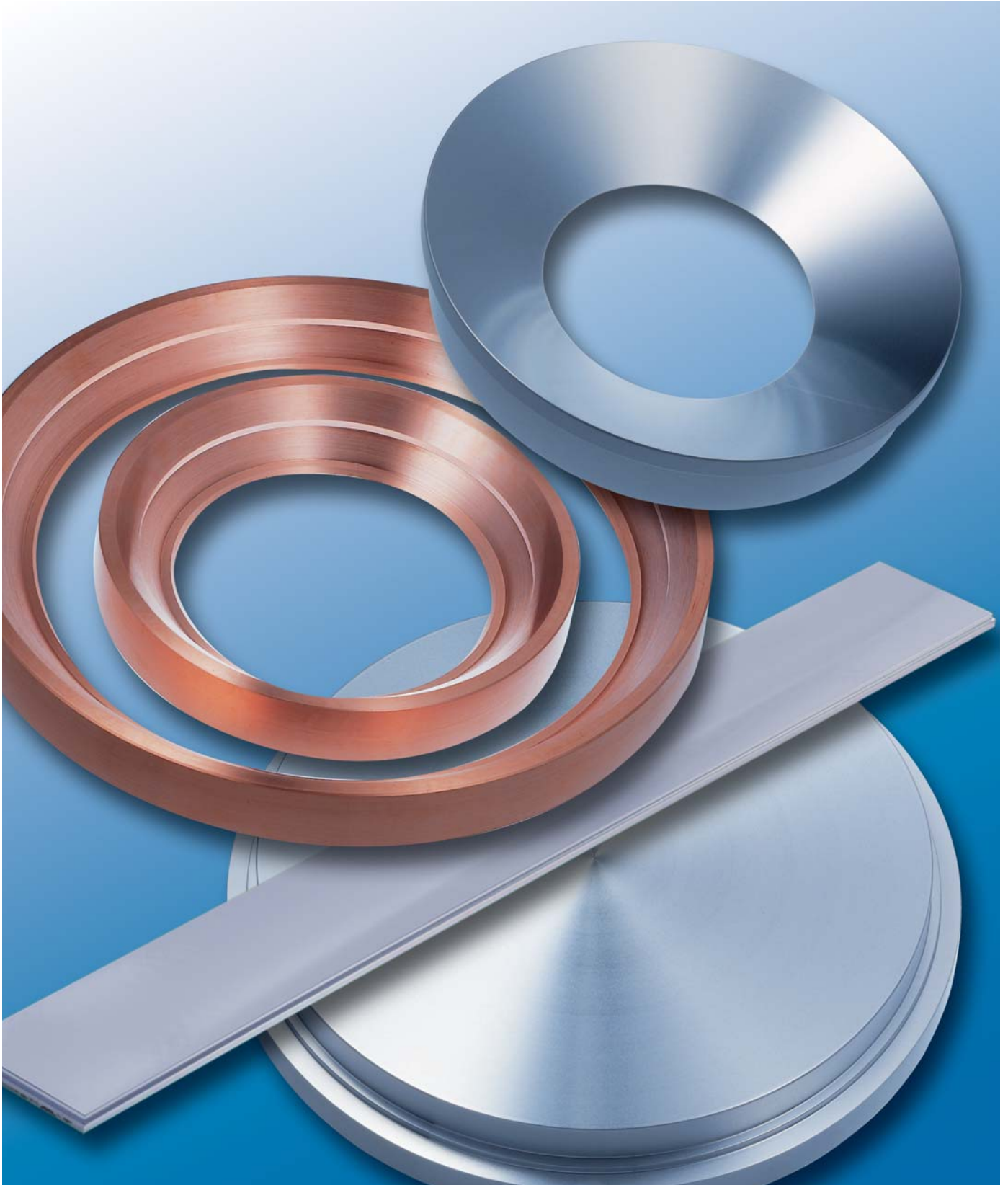
Aluminum	Al	5N5 (99.9995%)	12 mm monoblock	●			●		0483750
Aluminum	Al	5N5 (99.9995%)	12 mm monoblock	●				●	0483600
AlSi1	AlSi1	5N5 (99.9995%)	12 mm monoblock	●				●	0483604
Chromium	Cr	3N5 (99.95%)	12 mm compound	●				●	0483625
Copper	Cu	4N5 (99.995%)	12 mm monoblock	●				●	0483626
Molybdenum	Mo	3N5 (99.95%)	12 mm compound	●				●	0483628
Silicon	Si	5N (99.999%)	12 mm compound	●				●	0483632
Tantalum	Ta	4N (99.99%)	12 mm compound	●				●	0483633
Titanium	Ti	3N (99.9%)	12 mm compound	●				●	0483634
Tungsten	W	3N5 (99.95%)	12 mm compound	●				●	0483635
WTi10	WTi10	4N5 (99.995%)	12 mm compound	●				●	0483636

Ag, Au, Pd, Pt, SiO2 and other materials available on request.

Mounting methods



Other targets in accordance with customers' specifications are available on request.



Please find your local sales partner at:
www.thinfilmproducts.umicore.com

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