

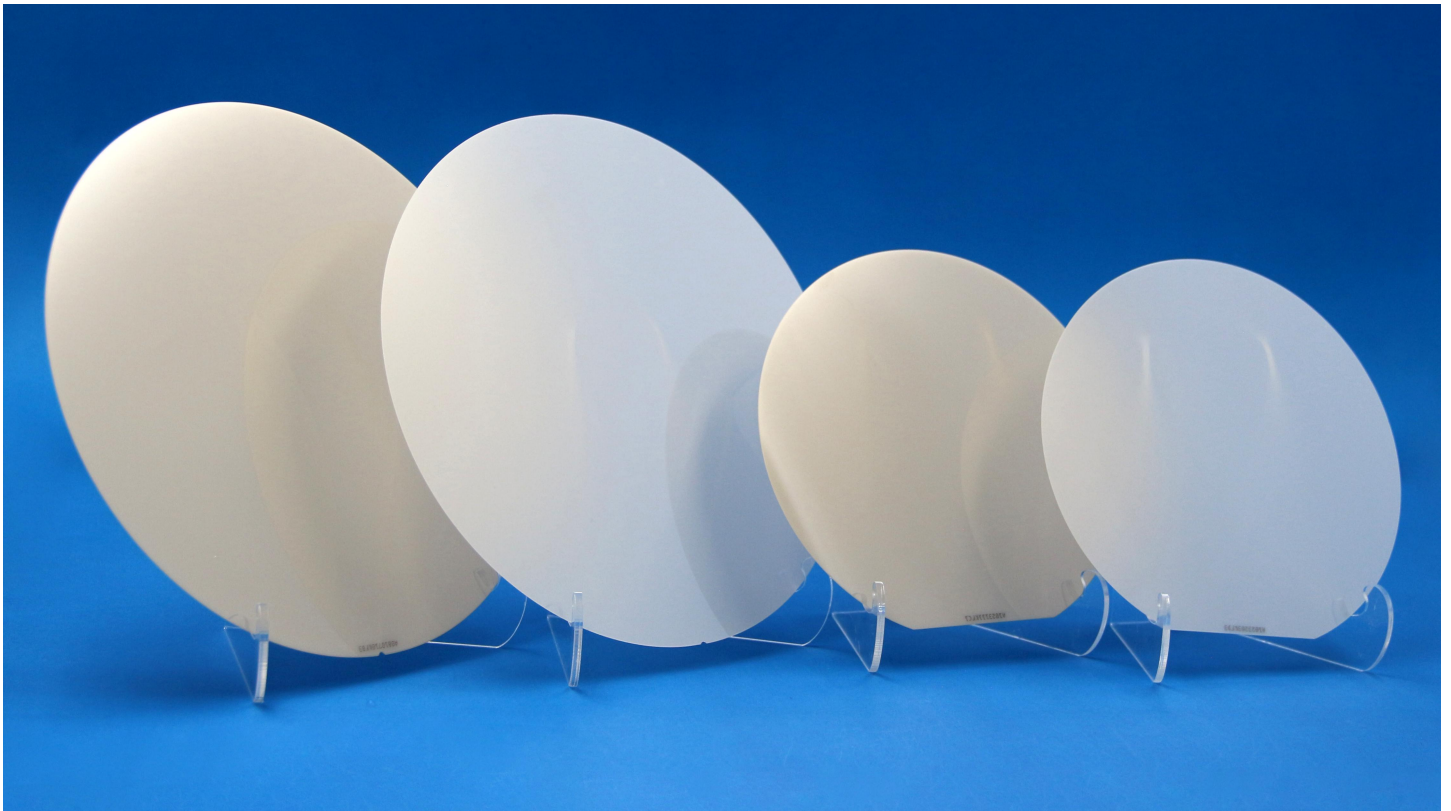


Aluminum Nitride (AlN) Wafer

■ Introduction

Aluminum Nitride (AlN) is a material that has a high thermal conductivity, making it ideal for use in high-temperature applications. It is often used as a substrate material for due to its excellent thermal, electrical and mechanical properties. Additionally, AlN wafer has a high resistance to thermal shock and high thermal stability, making it an ideal choice for high-temperature applications in electronic and optoelectronic devices.

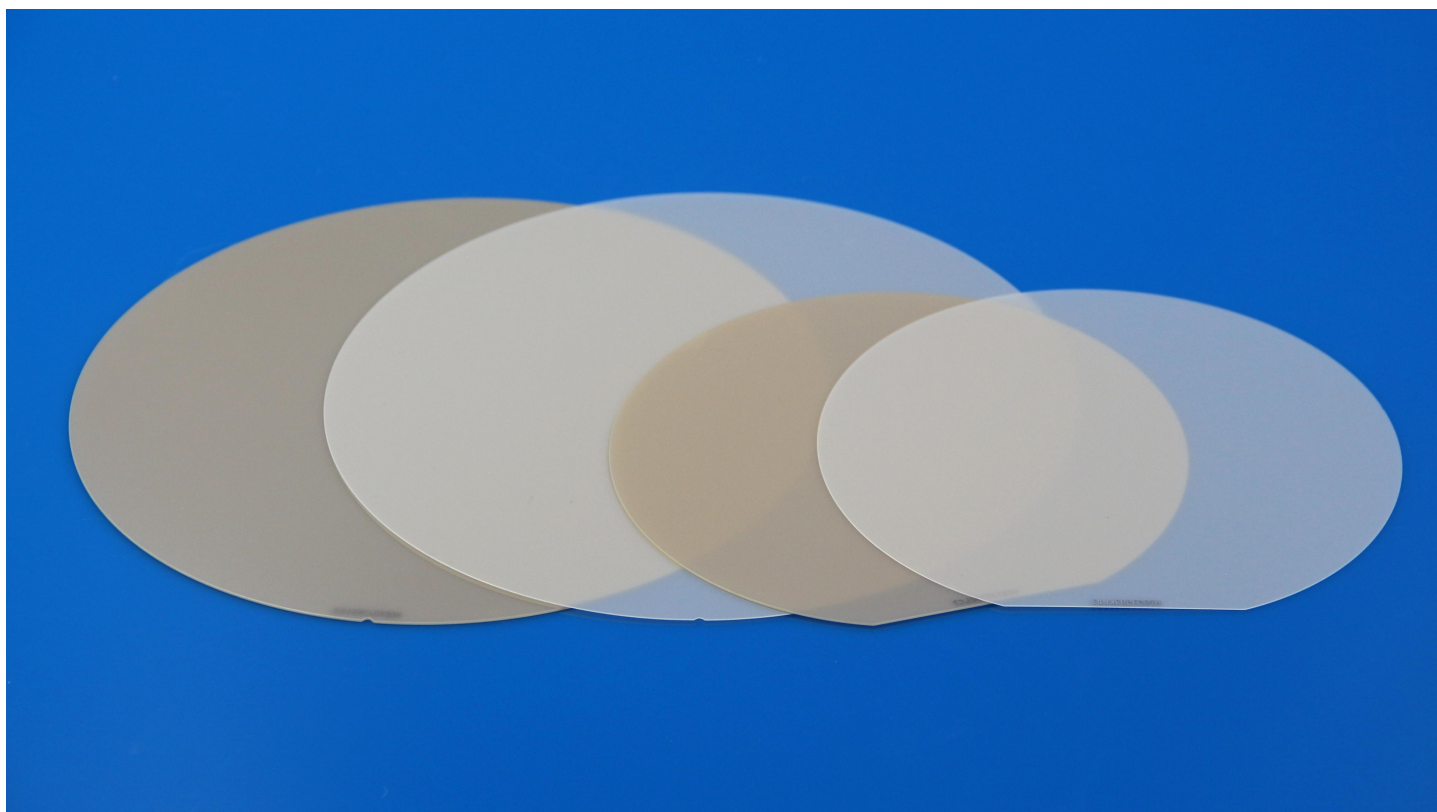
AlN wafer are widely used in the manufacture of various electronic components, including high-power microwave devices, high-temperature sensors, and high-frequency transistors. They are also used in the fabrication of devices such as light-emitting diodes (LEDs) and laser diodes.



■ Definition and Characteristics

- High thermal conductivity (170~230 W/m.K), up to 9.5 times than that of Alumina.
- Similar coefficient of thermal expansion to that of silicon (Si). To achieve high reliability of Si chip and thermal heat cycling (thermal shock).
- High electrical insulation, and Low dielectric constant.
- High mechanical strength (450 MPa).
- Superior corrosion resistance against molten metal.
- Very high purity, no toxicity.

Innovacera provides a range of standard aluminum nitride (AlN) wafer and substrates, such as 6" , 8" Aluminum Nitride(AlN) Wafer and 2" , 3" , 4" and 12" aluminum nitride substrates. AlN Wafers and Substrates can be produced in various thicknesses from 0.125mm to 3mm with polished or lapped sides, customized sizes or request are also available.



■ Properties

Properties	Unit	AN170	AN230
Color	-	Gray	Beige
Content of AlN	%	≥95	≥96
Bulk Density	g/cm ³	≥3.30	≥3.28
Flexural Strength	MPa	≥400	≥300
Compressive Strength	MPa	2500	2000
Hv 500g	GPa	10.5	9
Young's Modulus	GPa	300	300
Thermal Conductivity (@20°C)	W/(m·K)	≥170	≥220
Specific Heat	KJ/(Kg·K)	0.74	0.73
C.T.E (r.t.-400°C)	10 ⁻⁶ /K	4.6	4.6
Volume Resistivity	Ω·cm @20°C	≥10 ¹⁴	≥10 ¹³
Dielectric Strength	KV/mm	≥16	≥15
Dielectric Constant (@1MHz)	-	8.6	8.6
Loss Tangent (@1MHz)	×10 ⁻⁴	5	5

■ Applications

- Semiconductor manufacturing
- Microwave and RF devices
- Optoelectronic devices
- Thermal management
- High temperature electronic devices
- LED packages for cooling and protecting circuits
- Power modules (MOSFET, IGBT)



■ Specifications

Properties	Unit	6" Wafer	8" Wafer
Material	-	AlN	AlN
Thermal Conductivity	W/(m·K)	>170 >200 >220	>170 >200 >220
Thermal Expansion Coefficient	ppm/K (300~1200K)	4~6	4~6
Sintering Aid	-	Y ₂ O ₃	Y ₂ O ₃
Diameter	mm	150±0.25	200±0.25
Notch Depth	mm	1.0+0.25/-0/Locating Edge	1.0+0.25/-0
Notch Angle	-	90°+5/-2°	90°+5/-2°
Thickness	μm	400±15	400±15
Thickness Tolerance	μm	Premium: 0.0127 Standard: 0.0254	
TTV	μm	Premium: 5 Standard: 10	
BOW	μm	<±30	<±30
Warp	μm	<50	<50
Ra	nm	<50	<50

■ Available Dimensions for Immediate Delivery

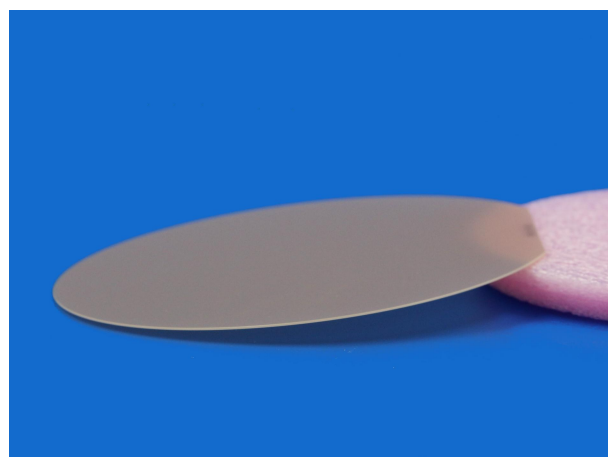
Surface Finishes:

L2S = Lapped 2 Sides

P1S = Polished 1 Side + 1 Side Lapped

P2S = Polished 2 Sides

Improved tolerances, surface finishes and alternate sizes are also available.



Item #	Geometry (mm)	Finish
AlN-001	25.4mm sq. x 0.005mm thk	L2S
AlN-002	25.4mm sq. x 0.076mm thk	L2S
AlN-003	25.4mm sq. x 0.005mm thk	P1S
AlN-004	25.4mm sq. x 0.076mm thk	P1S
AlN-005	25.4mm sq. x 0.005mm thk	P2S
AlN-006	25.4mm sq. x 0.076mm thk	P2S
AlN-007	50.8mm sq. x 0.005mm thk	L2S
AlN-008	50.8mm sq. x 0.076mm thk	L2S
AlN-009	50.8mm sq. x 0.108mm thk	L2S
AlN-010	50.8mm sq. x 0.127mm thk	L2S
AlN-011	50.8mm sq. x 0.203mm thk	L2S
AlN-012	50.8mm sq. x 0.254mm thk	L2S
AlN-013	50.8mm sq. x 0.381mm thk	L2S
AlN-014	50.8mm sq. x 0.508mm thk	L2S
AlN-015	50.8mm sq. x 0.635mm thk	L2S
AlN-016	50.8mm sq. x 0.762mm thk	L2S
AlN-017	50.8mm sq. x 1.016mm thk	L2S
AlN-018	50.8mm sq. x 1.270mm thk	L2S
AlN-019	50.8mm sq. x 1.524mm thk	L2S
AlN-020	50.8mm sq. x 1.778mm thk	L2S
AlN-021	50.8mm sq. x 2.032mm thk	L2S
AlN-022	50.8mm sq. x 2.159mm thk	L2S
AlN-023	50.8mm sq. x 2.286mm thk	L2S
AlN-024	50.8mm sq. x 2.540mm thk	L2S

AlN-025	50.8mm sq. x 0.005mm thk	P1S
AlN-026	50.8mm sq. x 0.076mm thk	P1S
AlN-027	50.8mm sq. x 0.108mm thk	P1S
AlN-028	50.8mm sq. x 0.127mm thk	P1S
AlN-029	50.8mm sq. x 0.203mm thk	P1S
AlN-030	50.8mm sq. x 0.254mm thk	P1S
AlN-031	50.8mm sq. x 0.381mm thk	P1S
AlN-032	50.8mm sq. x 0.508mm thk	P1S
AlN-033	50.8mm sq. x 0.635mm thk	P1S
AlN-034	50.8mm sq. x 0.762mm thk	P1S
AlN-035	50.8mm sq. x 1.016mm thk	P1S
AlN-036	50.8mm sq. x 1.270mm thk	P1S
AlN-037	50.8mm sq. x 1.524mm thk	P1S
AlN-038	50.8mm sq. x 1.778mm thk	P1S
AlN-039	50.8mm sq. x 2.032mm thk	P1S
AlN-040	50.8mm sq. x 2.159mm thk	P1S
AlN-041	50.8mm sq. x 2.286mm thk	P1S
AlN-042	50.8mm sq. x 2.540mm thk	P1S
AlN-043	50.8mm sq. x 0.005mm thk	P2S
AlN-044	50.8mm sq. x 0.076mm thk	P2S
AlN-045	50.8mm sq. x 0.108mm thk	P2S
AlN-046	50.8mm sq. x 0.127mm thk	P2S
AlN-047	50.8mm sq. x 0.203mm thk	P2S
AlN-048	50.8mm sq. x 0.254mm thk	P2S
AlN-049	50.8mm sq. x 0.381mm thk	P2S
AlN-050	50.8mm sq. x 0.508mm thk	P2S
AlN-051	50.8mm sq. x 0.635mm thk	P2S
AlN-052	50.8mm sq. x 0.762mm thk	P2S
AlN-053	50.8mm sq. x 1.016mm thk	P2S
AlN-054	50.8mm sq. x 1.270mm thk	P2S
AlN-055	50.8mm sq. x 1.524mm thk	P2S
AlN-056	50.8mm sq. x 1.778mm thk	P2S
AlN-057	50.8mm sq. x 2.032mm thk	P2S
AlN-058	50.8mm sq. x 2.159mm thk	P2S
AlN-059	50.8mm sq. x 2.286mm thk	P2S
AlN-060	50.8mm sq. x 2.540mm thk	P2S
AlN-061	76.2mm sq. x 0.108mm thk	L2S

AlN-062	76.2mm sq. x 0.127mm thk	L2S
AlN-063	76.2mm sq. x 0.203mm thk	L2S
AlN-064	76.2mm sq. x 0.254mm thk	L2S
AlN-065	76.2mm sq. x 0.381mm thk	L2S
AlN-066	76.2mm sq. x 0.508mm thk	L2S
AlN-067	76.2mm sq. x 0.635mm thk	L2S
AlN-068	76.2mm sq. x 0.762mm thk	L2S
AlN-069	76.2mm sq. x 1.016mm thk	L2S
AlN-070	76.2mm sq. x 1.270mm thk	L2S
AlN-071	76.2mm sq. x 1.524mm thk	L2S
AlN-072	76.2mm sq. x 1.778mm thk	L2S
AlN-073	76.2mm sq. x 2.032mm thk	L2S
AlN-074	76.2mm sq. x 2.159mm thk	L2S
AlN-075	76.2mm sq. x 2.286mm thk	L2S
AlN-076	76.2mm sq. x 2.540mm thk	L2S
AlN-077	76.2mm sq. x 0.108mm thk	P1S
AlN-078	76.2mm sq. x 0.127mm thk	P1S
AlN-079	76.2mm sq. x 0.203mm thk	P1S
AlN-080	76.2mm sq. x 0.254mm thk	P1S
AlN-081	76.2mm sq. x 0.381mm thk	P1S
AlN-082	76.2mm sq. x 0.508mm thk	P1S
AlN-083	76.2mm sq. x 0.635mm thk	P1S
AlN-084	76.2mm sq. x 0.762mm thk	P1S
AlN-085	76.2mm sq. x 1.016mm thk	P1S
AlN-086	76.2mm sq. x 1.270mm thk	P1S
AlN-087	76.2mm sq. x 1.524mm thk	P1S
AlN-088	76.2mm sq. x 1.778mm thk	P1S
AlN-089	76.2mm sq. x 2.032mm thk	P1S
AlN-090	76.2mm sq. x 2.159mm thk	P1S
AlN-091	76.2mm sq. x 2.286mm thk	P1S
AlN-092	76.2mm sq. x 2.540mm thk	P1S
AlN-093	76.2mm sq. x 0.108mm thk	P2S
AlN-094	76.2mm sq. x 0.127mm thk	P2S
AlN-095	76.2mm sq. x 0.203mm thk	P2S
AlN-096	76.2mm sq. x 0.254mm thk	P2S
AlN-097	76.2mm sq. x 0.381mm thk	P2S
AlN-098	76.2mm sq. x 0.508mm thk	P2S

AlN-099	76.2mm sq. x 0.635mm thk	P2S
AlN-100	76.2mm sq. x 0.762mm thk	P2S
AlN-101	76.2mm sq. x 1.016mm thk	P2S
AlN-102	76.2mm sq. x 1.270mm thk	P2S
AlN-103	76.2mm sq. x 1.524mm thk	P2S
AlN-104	76.2mm sq. x 1.778mm thk	P2S
AlN-105	76.2mm sq. x 2.032mm thk	P2S
AlN-106	76.2mm sq. x 2.159mm thk	P2S
AlN-107	76.2mm sq. x 2.286mm thk	P2S
AlN-108	76.2mm sq. x 2.540mm thk	P2S
AlN-109	101.6mm sq. x 0.108mm thk	L2S
AlN-110	101.6mm sq. x 0.108mm thk	L2S
AlN-111	101.6mm sq. x 0.108mm thk	L2S
AlN-112	101.6mm sq. x 0.254mm thk	L2S
AlN-113	101.6mm sq. x 0.381mm thk	L2S
AlN-114	101.6mm sq. x 0.508mm thk	L2S
AlN-115	101.6mm sq. x 0.635mm thk	L2S
AlN-116	101.6mm sq. x 0.762mm thk	L2S
AlN-117	101.6mm sq. x 1.016mm thk	L2S
AlN-118	101.6mm sq. x 1.270mm thk	L2S
AlN-119	101.6mm sq. x 1.524mm thk	L2S
AlN-120	101.6mm sq. x 1.778mm thk	L2S
AlN-121	101.6mm sq. x 2.032mm thk	L2S
AlN-122	101.6mm sq. x 2.159mm thk	L2S
AlN-123	101.6mm sq. x 2.286mm thk	L2S
AlN-124	101.6mm sq. x 2.540mm thk	L2S
AlN-125	101.6mm sq. x 0.108mm thk	P1S
AlN-126	101.6mm sq. x 0.108mm thk	P1S
AlN-127	101.6mm sq. x 0.108mm thk	P1S
AlN-128	101.6mm sq. x 0.254mm thk	P1S
AlN-129	101.6mm sq. x 0.381mm thk	P1S
AlN-130	101.6mm sq. x 0.508mm thk	P1S
AlN-131	101.6mm sq. x 0.635mm thk	P1S
AlN-132	101.6mm sq. x 0.762mm thk	P1S
AlN-133	101.6mm sq. x 1.016mm thk	P1S
AlN-134	101.6mm sq. x 1.270mm thk	P1S
AlN-135	101.6mm sq. x 1.524mm thk	P1S

AlN-136	101.6mm sq. x 1.778mm thk	P1S
AlN-137	101.6mm sq. x 2.032mm thk	P1S
AlN-138	101.6mm sq. x 2.159mm thk	P1S
AlN-139	101.6mm sq. x 2.286mm thk	P1S
AlN-140	101.6mm sq. x 2.540mm thk	P1S
AlN-141	101.6mm sq. x 0.108mm thk	P2S
AlN-142	101.6mm sq. x 0.108mm thk	P2S
AlN-143	101.6mm sq. x 0.108mm thk	P2S
AlN-144	101.6mm sq. x 0.254mm thk	P2S
AlN-145	101.6mm sq. x 0.381mm thk	P2S
AlN-146	101.6mm sq. x 0.508mm thk	P2S
AlN-147	101.6mm sq. x 0.635mm thk	P2S
AlN-148	101.6mm sq. x 0.762mm thk	P2S
AlN-149	101.6mm sq. x 1.016mm thk	P2S
AlN-150	101.6mm sq. x 1.270mm thk	P2S
AlN-151	101.6mm sq. x 1.524mm thk	P2S
AlN-152	101.6mm sq. x 1.778mm thk	P2S
AlN-153	101.6mm sq. x 2.032mm thk	P2S
AlN-154	101.6mm sq. x 2.159mm thk	P2S
AlN-155	101.6mm sq. x 2.286mm thk	P2S
AlN-156	101.6mm sq. x 2.540mm thk	P2S
AlN-157	114.3mm sq. x 0.254mm thk	L2S
AlN-158	114.3mm sq. x 0.381mm thk	L2S
AlN-159	114.3mm sq. x 0.508mm thk	L2S
AlN-160	114.3mm sq. x 0.635mm thk	L2S
AlN-161	114.3mm sq. x 0.762mm thk	L2S
AlN-162	114.3mm sq. x 1.016mm thk	L2S
AlN-163	114.3mm sq. x 1.270mm thk	L2S
AlN-164	114.3mm sq. x 1.524mm thk	L2S
AlN-165	114.3mm sq. x 1.778mm thk	L2S
AlN-166	114.3mm sq. x 2.032mm thk	L2S
AlN-167	114.3mm sq. x 2.159mm thk	L2S
AlN-168	114.3mm sq. x 2.286mm thk	L2S
AlN-169	114.3mm sq. x 2.540mm thk	L2S
AlN-170	114.3mm sq. x 0.254mm thk	P1S
AlN-171	114.3mm sq. x 0.381mm thk	P1S
AlN-172	114.3mm sq. x 0.508mm thk	P1S

AlN-173	114.3mm sq. x 0.635mm thk	P1S
AlN-174	114.3mm sq. x 0.762mm thk	P1S
AlN-175	114.3mm sq. x 1.016mm thk	P1S
AlN-176	114.3mm sq. x 1.270mm thk	P1S
AlN-177	114.3mm sq. x 1.524mm thk	P1S
AlN-178	114.3mm sq. x 1.778mm thk	P1S
AlN-179	114.3mm sq. x 2.032mm thk	P1S
AlN-180	114.3mm sq. x 2.159mm thk	P1S
AlN-181	114.3mm sq. x 2.286mm thk	P1S
AlN-182	114.3mm sq. x 2.540mm thk	P1S
AlN-183	114.3mm sq. x 0.254mm thk	P2S
AlN-184	114.3mm sq. x 0.381mm thk	P2S
AlN-185	114.3mm sq. x 0.508mm thk	P2S
AlN-186	114.3mm sq. x 0.635mm thk	P2S
AlN-187	114.3mm sq. x 0.762mm thk	P2S
AlN-188	114.3mm sq. x 1.016mm thk	P2S
AlN-189	114.3mm sq. x 1.270mm thk	P2S
AlN-190	114.3mm sq. x 1.524mm thk	P2S
AlN-191	114.3mm sq. x 1.778mm thk	P2S
AlN-192	114.3mm sq. x 2.032mm thk	P2S
AlN-193	114.3mm sq. x 2.159mm thk	P2S
AlN-194	114.3mm sq. x 2.286mm thk	P2S
AlN-195	114.3mm sq. x 2.540mm thk	P2S
AlN-196	50mm dia. x 5.000mm thk	L2S
AlN-197	50mm dia. x 10.000mm thk	L2S
AlN-198	50mm dia. x 20.000mm thk	L2S
AlN-199	50mm dia. x 25.000mm thk	L2S
AlN-200	50mm dia. x 5.000mm thk	P1S
AlN-201	50mm dia. x 10.000mm thk	P1S
AlN-202	50mm dia. x 20.000mm thk	P1S
AlN-203	50mm dia. x 25.000mm thk	P1S
AlN-204	50mm dia. x 5.000mm thk	P2S
AlN-205	50mm dia. x 10.000mm thk	P2S
AlN-206	50mm dia. x 20.000mm thk	P2S
AlN-207	50mm dia. x 25.000mm thk	P2S
AlN-208	100mm dia. x 5.000mm thk	L2S
AlN-209	100mm dia. x 10.000mm thk	L2S

AlN-210	100mm dia. x 20.000mm thk	L2S
AlN-211	100mm dia. x 25.000mm thk	L2S
AlN-212	100mm dia. x 5.000mm thk	P1S
AlN-213	100mm dia. x 10.000mm thk	P1S
AlN-214	100mm dia. x 20.000mm thk	P1S
AlN-215	100mm dia. x 25.000mm thk	P1S
AlN-216	100mm dia. x 5.000mm thk	P2S
AlN-217	100mm dia. x 10.000mm thk	P2S
AlN-218	100mm dia. x 20.000mm thk	P2S
AlN-219	100mm dia. x 25.000mm thk	P2S
AlN-220	150mm dia. x 5.000mm thk	L2S
AlN-221	150mm dia. x 10.000mm thk	L2S
AlN-222	150mm dia. x 20.000mm thk	L2S
AlN-223	150mm dia. x 25.000mm thk	L2S
AlN-224	150mm dia. x 5.000mm thk	P1S
AlN-225	150mm dia. x 10.000mm thk	P1S
AlN-226	150mm dia. x 20.000mm thk	P1S
AlN-227	150mm dia. x 25.000mm thk	P1S
AlN-228	150mm dia. x 5.000mm thk	P2S
AlN-229	150mm dia. x 10.000mm thk	P2S
AlN-230	150mm dia. x 20.000mm thk	P2S
AlN-231	150mm dia. x 25.000mm thk	P2S
AlN-232	200mm dia. x 5.000mm thk	L2S
AlN-233	200mm dia. x 10.000mm thk	L2S
AlN-234	200mm dia. x 20.000mm thk	L2S
AlN-235	200mm dia. x 25.000mm thk	L2S
AlN-236	200mm dia. x 5.000mm thk	P1S
AlN-237	200mm dia. x 10.000mm thk	P1S
AlN-238	200mm dia. x 20.000mm thk	P1S
AlN-239	200mm dia. x 25.000mm thk	P1S
AlN-240	200mm dia. x 5.000mm thk	P2S
AlN-241	200mm dia. x 10.000mm thk	P2S
AlN-242	200mm dia. x 20.000mm thk	P2S
AlN-243	200mm dia. x 25.000mm thk	P2S
AlN-244	300mm dia. x 5.000mm thk	L2S
AlN-245	300mm dia. x 10.000mm thk	L2S
AlN-246	300mm dia. x 20.000mm thk	L2S

AlN-247	300mm dia. x 25.000mm thk	L2S
AlN-248	300mm dia. x 5.000mm thk	P1S
AlN-249	300mm dia. x 10.000mm thk	P1S
AlN-250	300mm dia. x 20.000mm thk	P1S
AlN-251	300mm dia. x 25.000mm thk	P1S
AlN-252	300mm dia. x 5.000mm thk	P2S
AlN-253	300mm dia. x 10.000mm thk	P2S
AlN-254	300mm dia. x 20.000mm thk	P2S
AlN-255	300mm dia. x 25.000mm thk	P2S
AlN-256	350mm dia. x 5.000mm thk	L2S
AlN-257	350mm dia. x 10.000mm thk	L2S
AlN-258	350mm dia. x 20.000mm thk	L2S
AlN-259	350mm dia. x 25.000mm thk	L2S
AlN-260	350mm dia. x 5.000mm thk	P1S
AlN-261	350mm dia. x 10.000mm thk	P1S
AlN-262	350mm dia. x 20.000mm thk	P1S
AlN-263	350mm dia. x 25.000mm thk	P1S
AlN-264	350mm dia. x 5.000mm thk	P2S
AlN-265	350mm dia. x 10.000mm thk	P2S
AlN-266	350mm dia. x 20.000mm thk	P2S
AlN-267	350mm dia. x 25.000mm thk	P2S
AlN-268	400mm dia. x 5.000mm thk	L2S
AlN-269	400mm dia. x 10.000mm thk	L2S
AlN-270	400mm dia. x 20.000mm thk	L2S
AlN-271	400mm dia. x 25.000mm thk	L2S
AlN-272	400mm dia. x 5.000mm thk	P1S
AlN-273	400mm dia. x 10.000mm thk	P1S
AlN-274	400mm dia. x 20.000mm thk	P1S
AlN-275	400mm dia. x 25.000mm thk	P1S
AlN-276	400mm dia. x 5.000mm thk	P2S
AlN-277	400mm dia. x 10.000mm thk	P2S
AlN-278	400mm dia. x 20.000mm thk	P2S
AlN-279	400mm dia. x 25.000mm thk	P2S
AlN-280	450mm dia. x 5.000mm thk	L2S
AlN-281	450mm dia. x 10.000mm thk	L2S
AlN-282	450mm dia. x 20.000mm thk	L2S
AlN-283	450mm dia. x 25.000mm thk	L2S

AlN-284	450mm dia. x 5.000mm thk	P1S
AlN-285	450mm dia. x 10.000mm thk	P1S
AlN-286	450mm dia. x 20.000mm thk	P1S
AlN-287	450mm dia. x 25.000mm thk	P1S
AlN-288	450mm dia. x 5.000mm thk	P2S
AlN-289	450mm dia. x 10.000mm thk	P2S
AlN-290	450mm dia. x 20.000mm thk	P2S
AlN-291	450mm dia. x 25.000mm thk	P2S
AlN-292	500mm dia. x 5.000mm thk	L2S
AlN-293	500mm dia. x 10.000mm thk	L2S
AlN-294	500mm dia. x 20.000mm thk	L2S
AlN-295	500mm dia. x 25.000mm thk	L2S
AlN-296	500mm dia. x 5.000mm thk	P1S
AlN-297	500mm dia. x 10.000mm thk	P1S
AlN-298	500mm dia. x 20.000mm thk	P1S
AlN-299	500mm dia. x 25.000mm thk	P1S
AlN-300	500mm dia. x 5.000mm thk	P2S
AlN-301	500mm dia. x 10.000mm thk	P2S
AlN-302	500mm dia. x 20.000mm thk	P2S
AlN-303	500mm dia. x 25.000mm thk	P2S



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