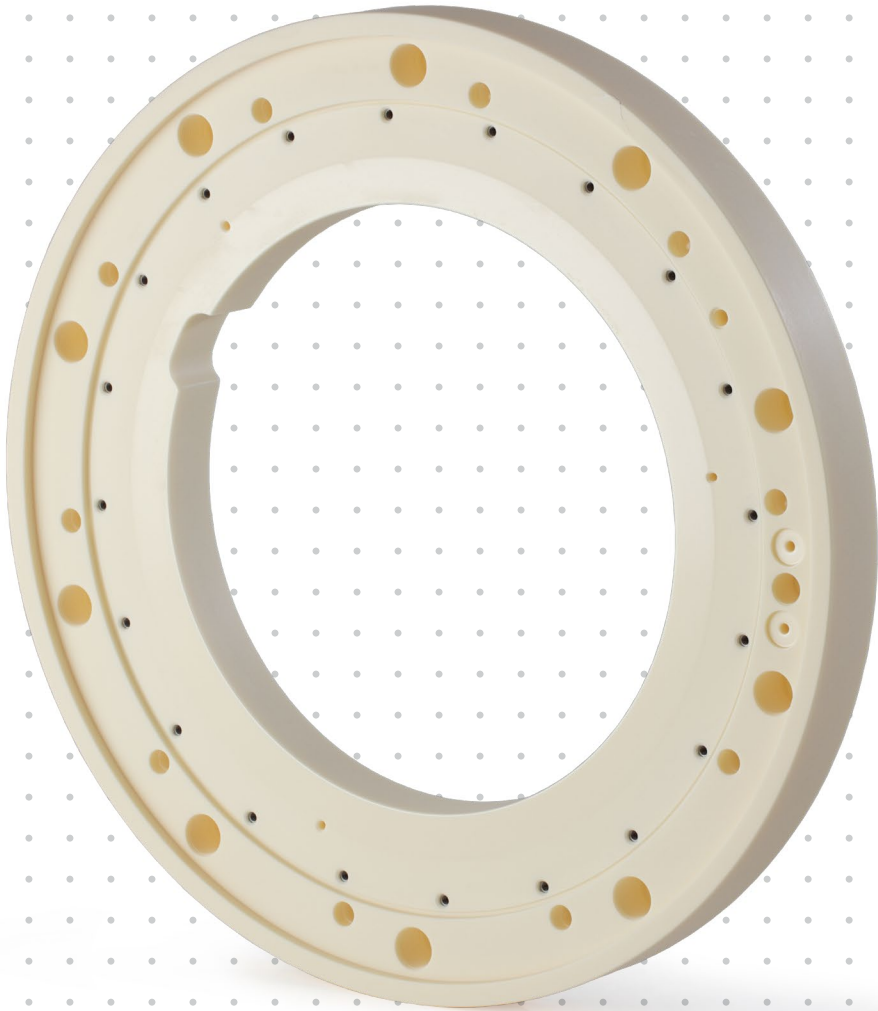




Advanced Alumina
Semiconductor



Advanced Alumina Materials & Manufacturing Processes for Semiconductor

CoorsTek provides state-of-the-art materials manufactured using the most cost-effective processes. CoorsTek maintains efficient, large-scale manufacturing facilities to support quick-turn prototype development and high-volume production.

Wide Variety of Manufacturing Options

- Injection molding
- Roll compacting
- Extruding
- Co-firing
- Isostatic pressing
- Dry pressing
- Hot pressing
- Tape casting
- Slip casting
- And more

Advanced Finishing Services

- Engineering design & support
- Precision grinding & lapping
- Laser machining
- Metallizing
- Ceramic-to-metal brazing
- Specialized coatings
- Threaded components
- Precision motion components
- Complex cleanroom assemblies

CoorsTek is uniquely capable of providing advanced materials and manufacturing technologies. Contact our specialists for help selecting the best materials and design for manufacturability.

PROPERTY	UNITS	TEST	AD-995	AD-995-LT	AD-996-SI	PLASMAPURE™ AD-998-12	PLASMAPURE-UC™ SA-999-1	SAPPHAL™	STATSAFE™ ADC-92
			NOM. 99.5%	NOM. 99.5%	NOM. 99.5%	MIN. 99.8%	MIN. 99.9%	MIN. 99.9%	NOM. 92%
Density	gm/cc	ASTM-C 20	3.90	3.90	3.90	3.92	3.92	3.98	3.85
Crystal Size, Average	MICRONS	THIN-SECTION	6	6	6	6	3	20	6
Color	-	-	Ivory	Ivory	Ivory	Ivory	Ivory	Translucent	-
4-PT Flexural Strength (MOR)	MPa	ASTM-F417	300 - 320	300	320	320	360	285	230
Elastic Modulus	GPa	ASTM-C848	370 - 380	370	380	380	386	390	370
Poisson's Ratio	-	ASTM-C848	0.22	0.22	0.22	0.22	0.22	0.24	0.23
Compressive Strength	MPa	ASTM-C773	2600	-	2600	2680	2700	-	-
Hardness (Vickers)	GPa	ASTM-C1327	16	16	16	17	17	17	12
Fracture Toughness, K _{Ic}	MPa m ^{1/2}	Knoop 1000g	4 - 5	4 - 5	4 - 5	4 - 5	4 - 5	4 - 5	3 - 4
Thermal Conductivity, 25° C	W/m-K	ASTM-C408	30	30	30	31	33	35	25
Coefficient of Thermal Expansion, 1000° C	1X 10 ⁻⁶ /°C	ASTM-C372	8.2	8.2	8.2	8.2	8.2	8.3	8.3
Specific Heat, 25° C	J/kg-K	ASTM-E1269	800	800	800	800	800	800	800
Maximum Use Temperature	°C	NO-LOAD COND.	1750	1750	1750	1750	1750	1800	-
Dielectric Strength	ac volts/mil	ASTM-D116	400	400	400	420	470	470	-
Dielectric Constant		ASTM-D150	9.7 - 9.8	9.8	9.8	9.8	9.8	10	-
Dielectric Loss (tan δ)		ASTM-D150	2 x 10 ⁻⁴	<1 x 10 ⁻⁴	<1 x 10 ⁻⁴	<1 x 10 ⁻⁴	<1 x 10 ⁻⁴	1 x 10 ⁻³	-
Volume Resistivity, 25° C	Ohm-cm	ASTM-D1829	> 10 ¹⁴	> 10 ¹⁴	> 10 ¹⁴	> 10 ¹⁴	> 10 ¹⁵	> 10 ¹⁵	1 x 10 ⁸
Volume Resistivity, 500° C	Ohm-cm	ASTM-D1829	2 x 10 ¹⁰	2 x 10 ¹⁰	2 x 10 ¹⁰	2 x 10 ¹¹	1 x 10 ¹²	8 x 10 ¹¹	-
Volume Resistivity, 1000° C	Ohm-cm	ASTM-D1829	2 x 10 ⁶	2 x 10 ⁶	1 x 10 ⁷	2 x 10 ⁷	1 x 10 ⁸	1 x 10 ¹⁰	-



The chart is intended to illustrate typical properties. Property values vary with method of manufacture, size, and shape of part. Data contained herein is not to be construed as absolute and does not constitute a representation or warranty for which CoorsTek assumes legal responsibility. CoorsTek is a registered trademark of CoorsTek, Inc. PlasmaPure is a trademark of CoorsTek, Inc.

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