

Polished Substrates

For Thin Film Applications



- Superstrate® 996
- Exceptional surface finish
- Superior via adhesion
- Timely delivery

CoorsTek, a recognized leader in the manufacture of thin film ceramic substrates, has increased its polishing capabilities.

Polished Superstrate® 996 is available in standard sizes from 1.0" to 4.5" squares. Standard thicknesses range from .010" to .025". While polished Superstrate® 996 is the industry standard, the full range of CoorsTek substrate materials are available in lapped and polished finishes.

In addition to a full line of polished alumina substrates, we now offer a polished substrate specifically

produced for metallized through hole applications. This new product exhibits outstanding via adhesion bond strengths and has significantly improved customers' process yields.

CoorsTek has developed a quality control program that guarantees product quality. Statistical Process Control stations monitor product quality throughout the manufacturing process. Quality control inspectors examine substrate surfaces to ensure that customer specifications are satisfied. When ultra-fine line geometries require the very highest quality alumina substrate, specify CoorsTek Polished

Superstrate® 996. With CoorsTek as your polished substrate supplier, you simply place one order and work with one customer service representative. CoorsTek offers comprehensive thin film ceramic manufacturing and machining services in one centrally located facility.

Count on CoorsTek, the leader in thin film substrate technology, to provide excellent product quality, outstanding customer service, and timely product delivery. Clearly, CoorsTek is *the choice* for polished substrates.

COORSTEK
Amazing Solutions.

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Specifications*	
Attributes	Typical Tolerances
Thickness Tolerance	± .0005"
Flatness (Restrained State)	.0005"/inch
Parallelism	.0005"
Length and width:	
As Fired	± 1%
Lasered	± .005"

*Custom specifications and tolerances available upon request.



Thin Film Substrate Materials Comparison

Typical Material Characteristics						
Characteristics	Unit	Test Methods	ADS-995	ADS-996	Superstrate® 996	Superstrate® TPS
Alumina Content (nominal)	Weight %	ASTM D2442	99.5	99.6	99.6	99.6
Color		—	White	White	White	White
Nominal Density	g/cc	ASTM C373	3.88	3.88	3.88	3.95
Hardness		ASTM E18, R45N	87	87	87	87
Surface Finish	Micrometers	Profilometer				
As-Fired	(Nanometers)	0.0004" radius Stylus	5 (127)	3 (77)	2 (51)	n/a
Lapped		0.030" Cutoff	< 30 (762)	< 12 (305)	< 10 (254)	< 10 (254)
Polished		ANSI/ASME B46.1	< 2 (51)	< 1 (26)	< 1 (26)	< 1 (26)
Grain Size	Microns		< 2.2	< 1.2	< 1.0	< 1.0
Water Absorption	%	ASTM373	nil	nil	nil	nil
Gas Permeability	—	**	nil	nil	nil	nil
Flexural Strength	Kpsi (MPa)	ASTM F394	83 (572)	86 (592)	90 (620)	99 (682)
Elastic Modulus	10 ⁶ psi (GPa)	ASTM C848	54 (372)	54 (372)	54 (372)	54 (372)
Poisson's Ratio		ASTM C848	0.2	0.2	0.2	0.2
Coefficient of Linear Thermal Expansion	10 ⁻⁶ /°C	ASTM C372				
25°-300°C			7.0	7.0	7.0	6.3
25°-600°C			7.5	7.5	7.2	7.2
25°-800°C			8.0	8.0	7.9	7.9
25°-1000°C			8.3	8.3	8.2	8.2
Thermal Conductivity	W/m ^o K	ASTM-C408				
100pC			25.5	26.6	26.9	27
Dielectric Strength	AC Volts/mil	ASTM-D116				
0.025"			575	575	600	640
0.040"			450	450	450	500
Dielectric Constant						
@ 1 MHz		ASTM-D150	9.8	9.9	9.9	9.9
10 GHz		ASTM-D2520	9.5	9.5	9.6	9.9
Loss Tangent						
@ 1 MHz			0.0001	0.0001	0.0001	0.0001
>10 GHz			0.0002	0.0002	0.0002	0.0001
Volume Resistivity	ohm-cm	ASTM D257				
25°C			> 1.0E+14	> 1.0E+14	> 1.0E+14	> 1.0E+15
100°C			> 1.0E+14	> 1.0E+14	> 1.0E+14	> 1.0E+15
300°C			> 1.0E+12	> 1.0E+12	> 1.0E+13	> 1.0E+15
500°C			> 1.0E+9	> 1.0E+9	> 1.0E+10	> 1.0E+12
700°C			> 1.0E+8	> 1.0E+8	> 1.0E+9	> 1.0E+10

The chart is intended to illustrate typical properties. Engineering data is representative. Property values vary somewhat with method of manufacture, size, and shape of part. This data is not to be construed as absolute and does not constitute a warranty for which we assume legal responsibility.

European Union (EU) Directive on Restriction of Hazardous Substances (RoHS): The EU Directive on RoHS specifies that an electronic product or component may not contain a listed substance except as specifically provided in the directive. CoorsTek ceramic substrates meet the requirements of the Directive

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