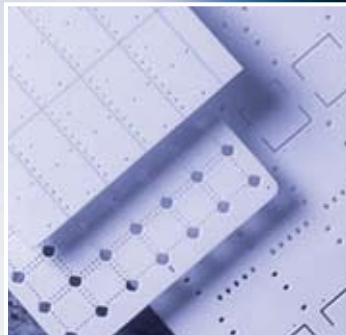
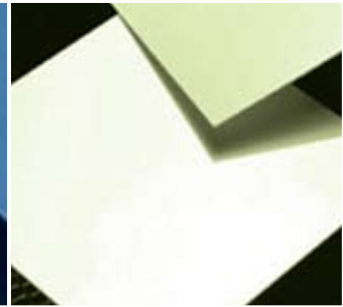


COORSTEK
Amazing Solutions.®



THICK FILM SUBSTRATES

ADVANCED CERAMIC THICK FILM SUBSTRATES

Setting the Standard

CoorsTek developed the standards for thick-film substrates and continues to lead the market with innovative materials, manufacturing, and secondary processes. Customers rely on us for cost-effective solutions delivered on time.

In-House Advanced Secondary Processes

From laser machining, lapping, polishing, and specialized cleaning to screen-printed and high-resolution photo-etched metallization, CoorsTek provides all the advanced services you need to shorten lead times and improve component quality and performance.

Characteristics	Units	Test Methods	ADOS-90R	ADS-96R
Alumina Content (nominal)	Weight %	ASTM-D2442	91	96
Color	*	*	Dark Brown	White
Nominal Density	g/cm ³ (lb/ft ³)	ASTM-C373	3.72 min. (0.134)	3.75 min. (0.135)
Hardness	*	ASTM-E18, R45N	78	82
Surface Finish CLA (as-fired)	Microrches (Micrometers)	Profilometer 0.0004" Radius Stylus 0.30" Cutoff ANSI/ASME B46.1	≤45 (1.14)	≤35 (0.89)
Grain Size	Micrometers	Intercept Method	3 - 7	3 - 7
Water Absorption	%	ASTM-C373	nil	nil
Gas Permeability	*	*	nil	nil
Flexural Strength	Kpsi (MPa)	ASTM-F394	53 (365)	58 (400)
Elastic Modulus	10 ⁶ psi (GPa)	ASTM-C623	45 (310)	44 (331)
Poisson's Ratio	*	ASTM-C623	0.24	0.25
CTE 25° - 200° C 25° - 500° C 25° - 800° C 25° - 1000° C	1X 10 ⁶ /°C (1X 10 ⁶ /°F)	ASTM-C372	6.4 (3.5) 7.3 (4.1) 8.0 (4.4) 8.4 (4.7)	6.4 (3.5) 7.2 (4.0) 7.9 (4.6) 8.2 (4.6)
Thermal Conductivity 20° C 100° C 400° C	W/m °K	Various (Btu • in/ft ² • h • °F)	13 (90) 12 (83) 8 (56)	26 (180) 20 (139) 12 (83)
Dielectric Strength (60 cycles AC avg. RMS) 0.025" 0.040"	AC Volts/mil (Kv/mm)	ASTM-D149	540 (21.3) *	600 (23.6) 490 (19.3)
Dielectric Constant 1 KHz 1 MHz	@25° C	ASTM-D150	11.8 10.3	9.5 9.5
Loss Tangent 1 KHz 1 MHz	@25° C	ASTM-D150	0.1 0.005	0.0010 0.0004
Volume Resistivity 25° C 300° C 500° C 700° C	ohm-cm or ohm-cm ² /cm	ASTM-D257	> 10 ¹⁴ 4 x 10 ⁸ * 7 x 10 ⁶	> 10 ¹⁴ 1.0 x 10 ¹² 1.0 x 10 ⁹ 1.0 x 10 ⁸

*Data Not available

Note: 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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