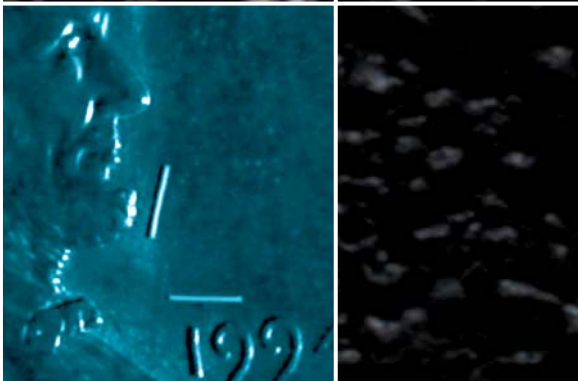
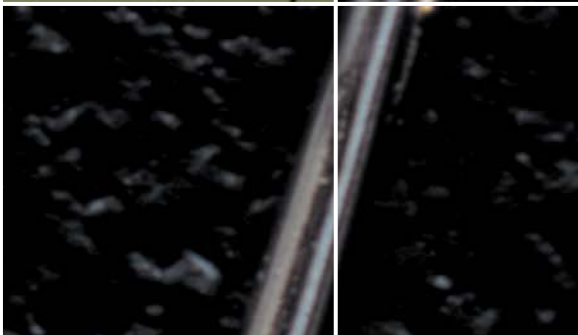
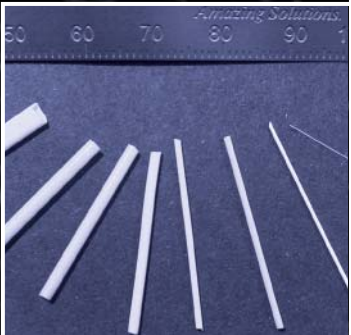


COORSTEK
Amazing Solutions.



PRECISION MICRO
EXTRUSION

MICRO EXTRUSION FOR MEDICAL, FLOW CONTROL, AND ELECTRONIC APPLICATIONS

CoorsTek, a recognized world leader in the manufacture of technical electronic ceramics, has expanded capabilities for the production of Micro Extrusion products.

CoorsTek offers a variety of ceramic material, such as Yttria Partially Stabilized Zirconia (YTZP) and Alumina (AD-96). Statistically capable processes allow for the manufacture of complex extruded profiles including square, rectangular, round and oval shapes, with solid, single or multi-bore geometries. Secondary machining is available with sub-micron surface finishes possible.

The CoorsTek strength lies in our ability to provide all aspects of your small profile extrusion needs. From engineering design and support, through ceramic fabrication and finishing, the CoorsTek vertically integrated manufacturing facilities are prepared to meet your cost and design objectives.

Trust CoorsTek, a proven leader in technical ceramics for over 90 years, to provide excellent product quality and value, outstanding customer service and engineering support with timely product delivery. Put our experience and vast resources to the test when your components are critical to your success.

Characteristics	Units	Test	AD-998-E	YTZP
Color	*	*	Ivory	Ivory
Density	g/cm ³	ASTM-C373	3.92	6.00 min.
Hardness	kg/mm ²	Knoop 1000 g	1440	1300
Fracture Toughness	MPa • m ^{1/2}	Single Edge Notch Beam	4 - 5	10.5 - 13
Average Grain Size	Micrometers	Circle Intercept Method	6	< 1.0
Flexural Strength @ 20 °C	MPG	ASTM-417	375	900
CTE, 25-500 °C	10 ⁻⁶ /C	ASTM-372	8.2	10.3
Thermal Conductivity @ 20 °C	W/mk	Various	30	2.2

NOTE: CoorsTek offers other materials, such as AD-96 (96% Alumina), AD-98 (98% Alumina), AD-995 (99.5% Alumina) and AD-999 (99.9% Alumina). Other materials may be available for specific applications. Porous tubes and rods are also available with apparent porosities between 0% and 50%. These products can be engineered with average pore sizes ranging between 0.3 microns and 100 microns. Contact CoorsTek for details.

	Limits	Tolerances	
		As Fired	Secondary Machining
Outside Diameter:			
Minimum	0.100 mm (0.004") (rods)	± 0.090 mm (0.0035")	± 0.001 mm (0.00004")
Maximum	6 mm (0.236")	± 0.090 mm (0.0035")	± 0.001 mm (0.00004")
Inside Diameter:			
Minimum	0.080 mm (0.003")	± 0.001 mm (0.00004") to ± 0.050 mm (0.002")* Dependent on Part Geometry	*
Maximum	See Wall Thickness		*
Wall Thickness:			
Minimum	0.125 mm (0.005") or NLT 10 %of Outside Diameter	± 1.5%, NLT 0.005mm (0.0002")	*
Length:			
Maximum	305 mm (12.0")	± 0.050 mm (0.002")	± 0.005 mm (0.0002")

* Certain design aspect ratios exist that consider the outside and inside diameters, and their impact on wall thickness and tolerances. Contact CoorsTek for specific design questions and tolerancing.

NLT = Not Less Than

These charts are 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.