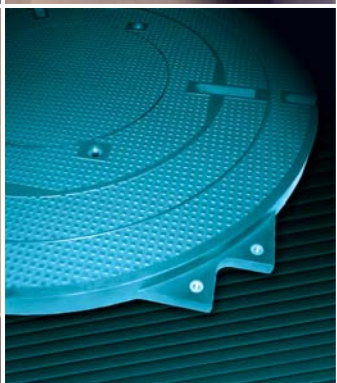


**COORSTEK**  
*Amazing Solutions.*



**PRECISION COMPONENTS**

## STRUCTURAL CERAMIC FOR METROLOGY AND MACHINE COMPONENTS

CoorsTek offers a full line of air-bearing guideways and structural precision components. A high specific stiffness and excellent thermal stability make our ceramic beams and stage components ideal for coordinate measurement machines, semiconductor lithography and wafer inspection, flat-panel display processing, and high-speed electronics assembly applications. We also offer specially formulated materials for low-contact, high-precision vacuum chucks for silicon wafer and flat-panel display processing.

### Improve Machine Performance

Isostatically pressed hollow-beam designs permit increased speeds due to higher stiffness and lower weights. Our high-purity ceramic materials exhibit extremely low thermal expansion properties – providing exceptional stability for greater accuracy over a wide range of operating temperatures.

### Fabrication Options

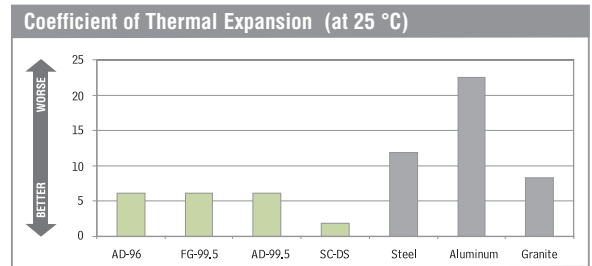
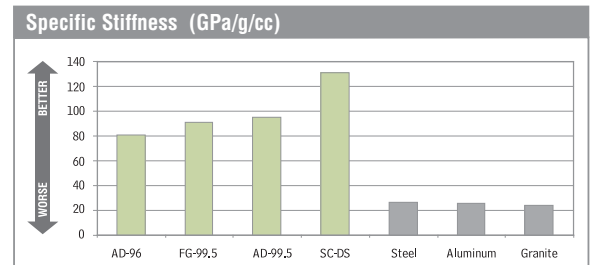
- Custom shapes, monolithic sizes up to 700 x 2600 mm
- Hollow shapes minimize weight and ensure maximum stiffness
- Large tooling inventories provide dimensional flexibility for designers
- Assembled structures allow matching of critical tolerances and design flexibility.



Custom shapes and monolithic sizes up to 700 mm x 2600 mm

### Improve Machine Reliability

The extreme-hardness, elasticity, and low-reactivity of CoorsTek ceramics provide long-life and low-wear components that are highly resistant to moisture absorption, corrosion, fatigue, and creep.



### CoorsTek Advanced Materials: Traditional Materials:

Properties	Units	CoorsTek Advanced Materials:				Traditional Materials:		
		Al <sub>2</sub> O <sub>3</sub> Ceramic AD-96	Al <sub>2</sub> O <sub>3</sub> Ceramic FG-99.5	Al <sub>2</sub> O <sub>3</sub> Ceramic AD-99.5	SiC Ceramic SC-DS	Steel 1020	Aluminum 6061-T6	Granite
Density	g/cc	3.72	3.80	3.90	3.15	7.88	2.69	2.6 - 3.1
	lb/cu in	0.134	0.136	0.141	0.11	0.284	0.097	0.09 - 0.11
Modulus of Elasticity	GPa	303	350	370	410	207	69	28 - 110
	x10 <sup>6</sup> psi	44	51	54	59	30	10	4 - 16
Specific Stiffness	$\frac{GPa}{g/cc}$	81	91	95	131	26.5	25.6	24
Flexural Strength MOR	MPa	358	375	397	480	*483	*483	9.6 - 38
	x10 <sup>3</sup> psi	52	54	57	70	*70	*45	1.4 - 5.5
Coefficient of Thermal Expansion at 25° C	10 <sup>-6</sup> /°C	6.1	6.1	6.1	2.1	11.9	22.5	6.5 - 8.3
	10 <sup>-6</sup> /°F	3.4	3.4	3.4	1.1	6.6	12.5	3.6 - 4.6
Thermal Conductivity	w/m °C	24.7	27.5	30	175	47	204	35 - 61
	btu/hr.ft.F	14.3	15.9	17.33	102	27	118	20 - 35
Specific Heat	J/kg. °C	880	880	880	658	962	418	840
	btu/lb °F	0.21	0.21	0.21	0.16	0.23	0.10	0.20
Water Absorption 48 hr soak	% by weight	none	none	none	none	none	none	0.02 - 0.58

\*Tensile strength

This chart is intended to illustrate typical properties at room temperature and is not to be construed as absolute engineering data.

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