

ZPF -Zero Expansion stiffness ceramics

ZPF is revolutionary ceramics that has zero expansion characteristics same as Low-Expansion-Recrystallized glass with high stiffness. As a substitute for recrystallized glass, ZPF meets current severe requests to pursuit state-of-the-art ultra fine technology. For example, semiconductor equipment (Wafer exposure, Reticle making) where nano size control is needed.



Mirror (25 × 25 × 200L)

【Feature】

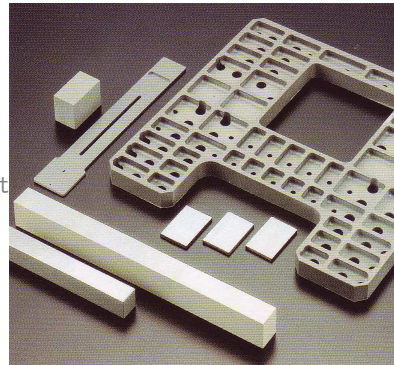
1. Low thermal expansion
2. High stiffness
3. Non-magnetism

	Unit	Test Method	ZPF-N	Conductive ZPF			Ref. Zero Expansion
				ZPF-E00	ZPF-E04	ZPF-ESC	
Specific gravit		Archimedes method	2.5	2.5	2.6	2.5	2.5
Young's modulus	Gpa	Resonant method	150	150	170	150	90
CTE	ppm/K at 23°C	JIS-R3251 (Laser Interference)	0.0	0.0	0.4	0.0	0.0
Thermal conductivity	W/m·K	JIS-R1611 (Laser Flash)	5	5	8	5	2
Specific heat	J/g·K	JIS-R1611 (Laser Flash)	0.9	0.9	1.0	1.0	0.8
Hardness	Gpa	JIS-R1610 (Vickers HV10)	7	7	7	7	7
Bending strengt	MPa	JIS-R1601 (4 points)	250	250	300	250	50
Relative magnetic permeability			1.0000	1.0000	1.0000	1.0000	1.0000
Volume resitivity	Ω·cm	3 terminal method	10 ¹²	10 ⁷	10 ⁵	10 ¹⁰	10 ¹³
Other			-Zero Expansion -Non-magnetism -High stiffness	-Conductive -antistatic -Zero Expansion -Non-magnetism	-Conductive -antistatic -CTE control -Quartz	-Receptivity Control -Large clamp -Zero Expansion -Non-magnetism	

【Application】

- Bar mirror, L-shaped mirror
- Electrostatic Chuck
- Parts of XY stage

Exmple Exposure equipment, Reticle making equipment
 Wafer test machine, Reticle rework equipment



ZPF example

Business headquarters

10th, Ryoka Bldg, 6-2 Nihonbashi-muromachi 4-chome,
 Chuo-ku, Tokyo103-0022 Japan

TEL : +81-3-3271-5061
 FAX : +81-3-3271-5062

Mail : nc-sales@niterragroup.com