

# T69

## Graphite Sheets



T69 is a highly oriented pyrolytic graphite sheet with high thermal conductivity. A heat source can reduce temperature by spreading heat over the T69. It is flexible and has features of ultra-thin and high EMI shielding effect.



### Features

- Excellent thermal conductivity: 1600 W/mK (4x as high as copper, 7x as high as aluminium)
- Lightweight: Specific gravity: 2.3g/cm<sup>3</sup>
- Flexible and easy to be cut or trimmed
- Low thermal resistance
- Low moisture content: <1%

### Applications

Smart phones, mobile phone, NB, Tablet PC  
LED backlight, PDP / LCD / OLED display, High power LED  
DVC, DVS, PC card

### Properties

Property		Test Methods
Thickness (µm)		Micrometer
Thermal conductivity (W/m.k)	XY axis	AC calorimeter
	Z axis	Laser flash
Thermal diffusivity (cm <sup>2</sup> /S)		AC calorimeter
Density (g/cm <sup>3</sup> )		Archimedes law
Electrical conductivity (S/cm)		JIS K7194
Flexibility		MIT

Property		T69-17	T69-25	T69-40	T69-50	T69-70	T69-100
Thickness (mm)		17µm	25µm	40µm	50µm	70µm	100µm
		0.017±0.005	0.025±0.010	0.040±0.012	0.050±0.015	0.070±0.017	0.100±0.019
Thermal conductivity (W/m.k)	X-Y Direction	1750	1500	1350	1300	1000	700
	Z Direction	11	18	20	20	20	26
Thermal diffusivity (cm <sup>2</sup> /s)		10 - 11 (0.001 - 0.0011 m <sup>2</sup> /s)	9 - 10 (0.0009 - 0.0011 m <sup>2</sup> /s)	9 - 10 (0.0009 - 0.0011 m <sup>2</sup> /s)	8 - 10 (0.0008 - 0.0011 m <sup>2</sup> /s)	8 - 10 (0.0008 - 0.0011 m <sup>2</sup> /s)	8 - 10 (0.0008 - 0.0011 m <sup>2</sup> /s)
Density (g/cm <sup>3</sup> )		2.1 (2100 kg/m <sup>3</sup> )	1.92 (1095 kg/m <sup>3</sup> )	1.8 (1800 kg/m <sup>3</sup> )	1.7 (1700 kg/m <sup>3</sup> )	1.2 (1200 kg/m <sup>3</sup> )	0.85 (850 kg/m <sup>3</sup> )
Specific heat (at 50°C) (J/gk)		0.85 (850J/kgk)	0.85 (850J/kgk)	0.85 (850J/kgk)	0.85 (850J/kgk)	0.85 (850J/kgk)	0.85 (850J/kgk)
Heat resistance °C		400	400	400	400	400	400
Extensional strength (Mpa)	X-Y Direction	40	30	25	20	20	20
	Z Direction	0.1	0.1	0.4	0.4	0.4	0.4
Expansion coefficient (1/K)	X-Y Direction	9.3 x 10 <sup>-7</sup>	9.3 x 10 <sup>-7</sup>	9.3 x 10 <sup>-7</sup>	9.3 x 10 <sup>-7</sup>	9.3 x 10 <sup>-7</sup>	9.3 x 10 <sup>-7</sup>
	Z Direction	3.2 x 10 <sup>-5</sup>	3.2 x 10 <sup>-5</sup>	3.2 x 10 <sup>-5</sup>	3.2 x 10 <sup>-5</sup>	3.2 x 10 <sup>-5</sup>	3.2 x 10 <sup>-5</sup>
Bending test (R5/180°C) (times)		20000 or more	20000 or more	20000 or more	20000 or more	20000 or more	20000 or more
Electric conductivity (S/cm)		20000	20000	20000	20000	20000	20000