

# KOBELITE LAMINATE

## KEL-GEF

### Glass epoxy laminates

#### ■ Features

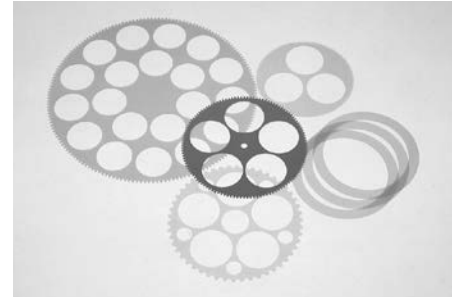
- Precise thickness and low warpage compared to the standard epoxy glass laminates.

#### ■ Applications

- Retaining board for polishing
- DAM substrate

#### ■ Polishing products

- Hard disk



#### ■ Standard Specifications

Part Number	Type	Master Size (Length×Width) (mm)	Actual Thickness (mm)
KEL-GEF	—	$1020^{+5}_{-0} \times 1020^{+5}_{-0}$	0.1
			0.2
			0.3
			0.4
			0.5
			0.6
			0.7
			0.8
			1.0
			1.2
			1.5
			1.6
			2.0
			2.5
			(R)
	0.3		
	0.4		
	0.5		
	0.6		
	0.7		
	0.8		
	1.0		
	1.2		
	1.5		
	1.6		
2.0			
2.5			

※Please consult in advance for production support.

## ■ Characteristics

Item		Condition	Unit	Actual Value
				KEL-GEF/KEL-GEF (R)
Withstand Voltage Vertical To Layer		C-90/20/65	kV/mm	18~30
Insulation Resistance		C-90/20/65	Ω	1×10 <sup>14</sup> ~1×10 <sup>15</sup>
		C-90/20/65+D-2/100		1×10 <sup>14</sup> ~5×10 <sup>14</sup>
Dielectric Constant	(1MHz)	C-90/20/65	—	4.5~5.0
		C-90/20/65+D-24/23		4.6~5.1
Dissipation Factor	(1MHz)	C-90/20/65	—	0.016~0.025
		C-90/20/65+D-24/23		0.020~0.026
Flexural Strength	Length	A	N/mm <sup>2</sup>	600~650
	Width			450~500
Flexural Modulus	Length	A	kN/mm <sup>2</sup>	22~24
	Width			19~22
Compressive Strength	vertical	A	N/mm <sup>2</sup>	400~550
	parallel			250~300
Izod impact strength		A	J/cm	5.00~6.50
Cleavage Strength		A	kN	7.84~9.81
Air Flammability		E-2/180	—	No abnormality
Specific Gravity		A	—	1.7~1.9
Chemical Resistance	HCl	(*1)	—	No abnormality
	NaOH			No abnormality
Flammability	(UL-94)	A	—	V-0
Aptitude Punching Temperature		A	°C	—
CTE *2	X	(30~80°C)	ppm/°C	12~14
	Y			14~16
	Z			50~70

The contents of this report are based on the results of experiments conducted by HITACHI CHEMICAL and do not represent a guarantee of the values for each property. Before use, please study its properties, methods for using it, etc., using this data as a reference.

\*1) Concentration: 3±0.2%, 20±2°C. Appearance checked with naked eyes after soaking for 24hrs.

\*2) Heating Rate: 10°C/min.