

# Polyimide Multilayer Material

## MCL-I-671 GIA-671N<Prepreg>

### Glass Modified Polyimide Multilayer Material (GPY)

#### ■ Features

- High Tg (>230°C : DMA) material for high through-hole reliability.
- Same lamination condition as FR-4 is applicable. (175°C, 90 min.)
- MDA, a general polyimide resin curing agent, is not used. (Non-MDA Resin System)
- Resin flow control technology enables from high to low flow.

#### ■ Applications

- Main frame computers and super computers.
- Semiconductor testing equipment, and burn-in boards.
- Flex-rigid PWBs. (no-flow prepreg)

#### ■ Standard Specifications

Part Number	Type	Copper Foil Thickness	Code Name	Actual Thickness and Tolerance
MCL-I-671	—	12μm 18μm 35μm 70μm	0.06	0.06±0.02mm
			0.1	0.10±0.02mm
			0.2	0.20±0.04mm
			0.3	0.30±0.04mm
			0.41	0.41±0.05mm
			0.79	0.79±0.10mm

Note 1) In case laminate thickness lies in between two thickness figures shown above, the tolerance of such laminate would be equal to the tolerance of the thicker one.

Note 2) The thickness means that of dielectric layer.

#### ■ Characteristics

(t0.8mm)

Item	Condition	Unit	Actual Value	Test Method (IPC-TM-650)
			MCL-I-671	
Tg	TMA	°C	200~213	2.4.24
	DMA		230~245	—
CTE *1	X Y	(30~120°C)	ppm/°C	2.4.24
	Z	(<Tg)	12~16	
		(>Tg)	50~80	
Solder Heat Resistance (260°C)	A	sec.	>300	—
T-260 (Without Copper)	TMA	min.	>60	2.4.24.1
T-288 (Without Copper)			>15	
Decomposition Temperature (5% Weight Loss)	TGA	°C	330~350	2.3.40
Copper Peel Strength (18μm)	20°C	A	kN/m	2.4.8
	180°C			
Flexural Modulus (Lengthwise)	A	GPa	1.0~1.2	2.4.4
Dielectric Constant	1MHz	C-96/20/65	—	24~26
	1GHz*2			4.2~4.4
Dissipation Factor	1MHz	C-96/20/65	—	2.5.5.1
	1GHz*2			4.1~4.3
Volume Resistivity	C-96/35/90	Ω·cm	1×10 <sup>15</sup> ~1×10 <sup>16</sup>	2.5.5.1
Surface Resistance				Ω
Insulation Resistance	C-96/20/65	Ω	1×10 <sup>14</sup> ~1×10 <sup>16</sup>	2.5.5.5
	C-96/20/65+D-2/100			1×10 <sup>13</sup> ~1×10 <sup>15</sup>
Water Absorption	E-24/50+D-24/23	%	0.0110~0.0130	2.5.5.1
Flammability (UL-94)	A	—	0.0130~0.0150	2.5.5.5
			V-0	2.3.10

\*1) Heating Rate: 10°C/min.

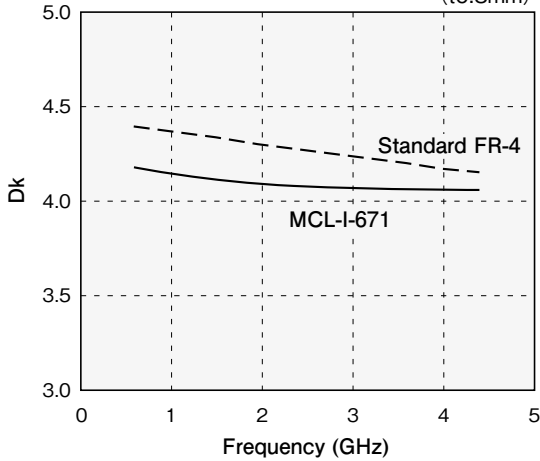
\*2) Measured by Triplate-line Resonator.

●Prepreg

Part Number	Type		Glass Cloth		Properties			Application	
			Style	Yarn Count (Warp×Fill)	Resin Content (%)	Volatile Content (%)	Resin Flow (%)		Dielectric Thickness after Lamination*1 (mm)
GIA-671N	(T)	0.03	106	56×56	72±3	≤2.0	50±5	0.059	MLB
		0.05	1080	60×48	65±3		43±5	0.087	
		0.1	2116	60×58	54±3		29±5	0.134	
	(N)	0.03	106	56×56	68±3		4±3	0.047	Flex-rigid PWBs
		0.05	1080	60×48	59±3		54±5	0.072	
	(F)	0.05	1080	60×48	74±3			0.111	Metal core PWBs
Test Method(IPC-TM-650)					2.3.16	2.3.19	2.3.17	—	—

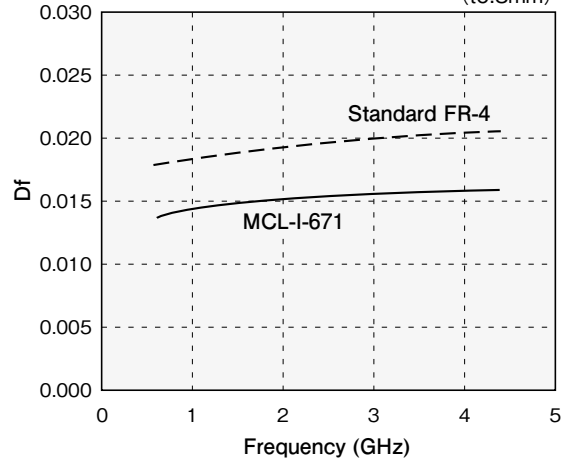
\*1) The dielectric thickness after lamination is defined as the thickness of one sheet of prepreg when the resin flow is 0%. This value changes depending on the press condition or inner layer pattern.

●Correlation between Dielectric Constant and Frequency (t0.8mm)

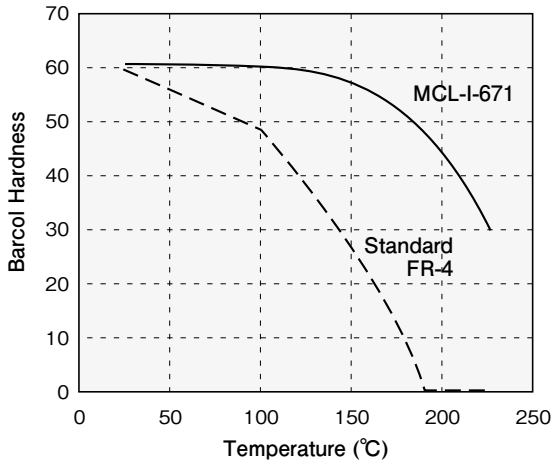


Note) Measured by Triplate-line Resonator.

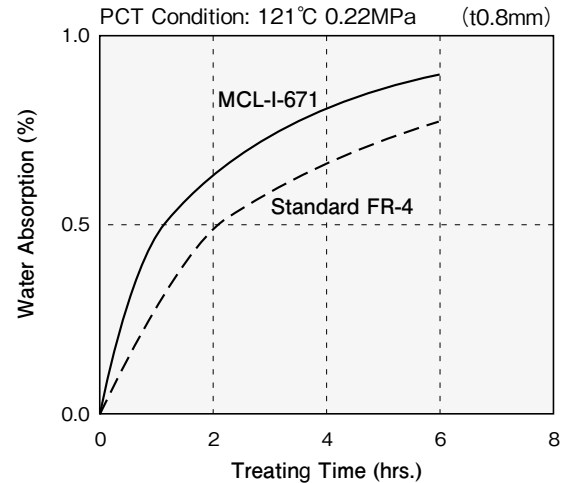
●Correlation between Dissipation Factor and Frequency (t0.8mm)



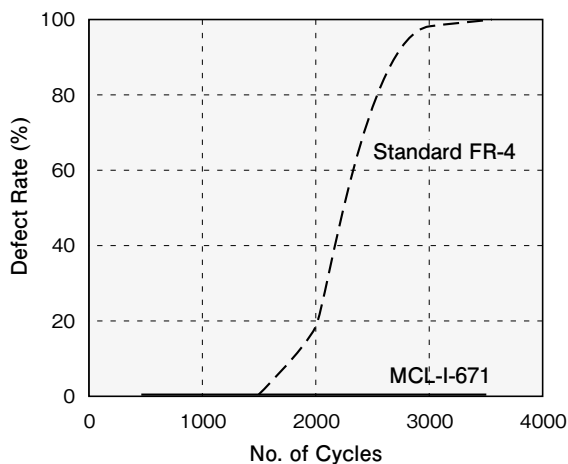
●Barcol Hardness



●Water Absorption



●Thermal Shock Test MIL-STD-202 Method 107E



●Flexural Strength

