

Superior thermal resistance  
MOT 160°C

Wide line-up of film thickness  
and copper foil

Excellent dimensional  
stability

**Applications**  
**Aerospace/Industry/Automotive**

Consumer mobile products (Smartphone, tablet PC),  
Medical, Industrial, Avionics/Space applications,  
In-vehicle cable (Wire harness alternative), etc.



## FELIOS

Double-sided copper clad    Single-sided copper clad

**R-F775    R-F770**

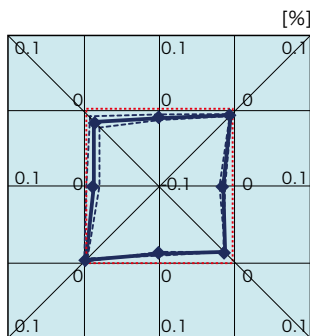
### Flexible circuit board materials

FELIOS adhesiveless flex materials are available in a wide-range of film and copper foil thicknesses to support all applications. FELIOS offers superior thermal resistance, dimensional stability and quality. Suitable for aerospace applications with low outgassing. (Compliant with ASTM E-595)

### Dimensional stability

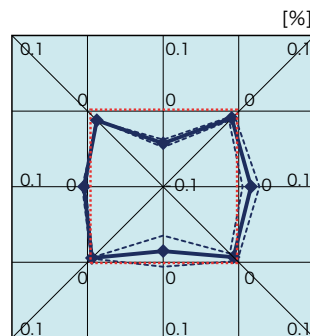
Dimensional change after etching

Panasonic Industry  
FCCL materials  
**R-F775 After etching**



**Comparative material**

After etching



Evaluation material is R18-100-R18, thickness 4mil.

The above data are typical values and not guaranteed values

### Line-up

Available in various film and copper foil combinations. **Roll-cut type** MAX 610mm(MD) x 500mm(TD)

**Roll type** W=250mm, 500mm

Copper foil thickness		Film thickness						Unit: mils (mm)
		0.5 (0.013)	1.0 (0.025)	2.0 (0.050)	3.0 (0.075)	4.0 (0.100)	5.0 (0.125)	6.0 (0.150)
RA copper foil	1/4oz (9μm)	●*1	●*1	●*1	-	-	-	●*1
	1/3oz (12μm)	●	●	●	●	●	-	-
	1/2oz (18μm)	●	●*2	●*2	●*2	●*2	●*2	●
	1oz (35μm)	●*1	●*2	●*2	●*2	●*2	●*2	●
	2oz (70μm)	-	●*2	●*2	●	●	●	-
	3oz (105μm)	-	●	●	-	-	-	-
ED copper foil	- (2μm)	●	●	●	●	-	-	-
	1/6oz (6μm)	●	●	●	-	-	-	-
	1/4oz (9μm)	●	●	●	●	●	●	●
	1/3oz (12μm)	●	●	●	●	●	●	●
	1/2oz (18μm)	●	●	●	●	●	-	-
	1oz (35μm)	-	●	●	●	●	-	-

\*1 Special option \*2 W=610mm is optional.

Our Halogen-free materials are based on JPCA-ES-01-2003 standard and others.

Please refer to the next page for General properties.

## General properties

Item		Test method	Condition	Unit	FELIOS R-F775
Solder heat resistance		JIS C 6471	A	°C	>330
			C-96/40/90		260
Dielectric constant(Dk)	1GHz	ASTM D150	A	—	3.2
Dissipation factor(Df)					0.003
Tensile modulus		ASTM D882	A	GPa	7.1
Tensile strength		Internal method	A	MPa	542
Peel strength	RA:1/3oz(12μm)	JIS C 6471	A	N/mm	1.35
CTE	MD/TD/Z-axis	JIS R 3251	50–200°C	ppm/°C	17 / 19 / 101
Thermal conductivity		Laser flash	A	W/m·K	0.16
Dimensional stability		IPC-TM-650	After etching MD direction	%	0.00±0.10
			After etching TD direction		0.00±0.10
Water absorption		IPC-TM-650	23°C 24h immersion	%	0.9
Flammability		UL	A and E-168/70	—	94V-0
Outgas	TML*	ASTM E595-07 ASTM E595-15	—	%	0.62
	CVCM*				0.05
	WVR*				0.55

The sample thickness is film 25 μm, copper foil 12 μm.

\* TML: Total Mass Loss


CVCM: Collected Volatile Condensable Materials

WVR: Water Vapor Recovered

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Please see our website for Notes before you use.

[industrial.panasonic.com/ww/electronic-materials](http://industrial.panasonic.com/ww/electronic-materials)

**Panasonic Industry R-F775** 

**Panasonic Industry Co., Ltd. Electronic Materials Business Division**

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