

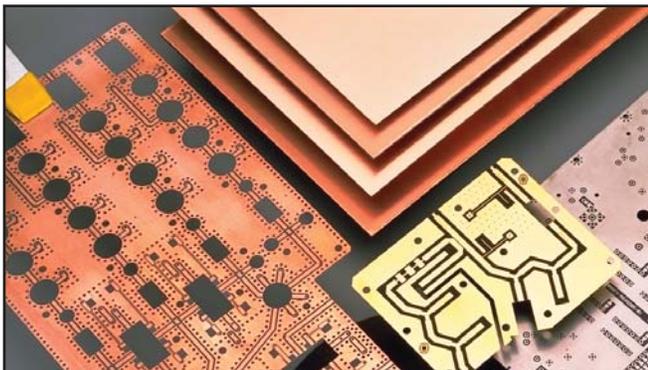
RT/duroid® 6006/6010LM High Frequency Laminates

Features:

- High dielectric constant for circuit size reduction.
- Low loss. Ideal for operating at X-band or below.
- Low Z-axis expansion for RT/duroid 6010LM. Provides reliable plated through holes in multilayer boards.
- Low moisture absorption for RT/duroid 6010LM. Reduces effects of moisture on electrical loss.
- Tight ϵ_r and thickness control for repeatable circuit performance.

Some Typical Applications:

- Space Saving Circuitry
- Patch Antennas
- Satellite Communications Systems
- Power Amplifiers
- Aircraft Collision Avoidance Systems
- Ground Radar Warning Systems



RT/duroid® 6006/6010LM microwave laminates are ceramic-PTFE composites designed for electronic and microwave circuit applications requiring a high dielectric constant. RT/duroid 6006 laminate is available with a dielectric constant value of 6.15 and RT/duroid 6010LM laminate has a dielectric constant of 10.2.

RT/duroid 6006/6010LM microwave laminates feature ease of fabrication and stability in use. They have tight dielectric constant and thickness control, low moisture absorption, and good thermal mechanical stability.

Laminates are supplied clad both sides with $\frac{1}{4}$ to 2 oz./ft.² (8 to 70 μm) electrodeposited (ED) copper foil. Cladding with rolled copper foil is also available. Thick aluminum, brass, or copper plate on one side may be specified.

Standard tolerance dielectric thicknesses of 0.010", 0.025", 0.050", 0.075", and 0.100" (0.254, 0.635, 1.270, 1.905, 2.54 mm) are available. When ordering RT/duroid 6006 and RT/duroid 6010LM laminates, it is important to specify dielectric thickness, electrodeposited or rolled, and weight of copper foil required.

The information in this data sheet is intended to assist you in designing with Rogers' circuit material laminates. It is not intended to and does not create any warranties express or implied, including any warranty of merchantability or fitness for a particular purpose or that the results shown on this data sheet will be achieved by a user for a particular purpose. The user should determine the suitability of Rogers' circuit material laminates for each application.

Typical Values

RT/duroid® 6006, RT/duroid 6010LM Laminates

Property	Typical Value [2]		Direction	Units [1]	Condition	Test Method
	RT/duroid® 6006	RT/duroid 6010.2LM				
Dielectric Constant ϵ_r	6.15 ± 0.15	10.2 ± 0.25	Z		10 GHz/A	IPC-TM-650 2.5.5.5
Dissipation Factor, $\tan \delta$	0.0027	0.0023	Z		10 GHz/A	IPC-TM-650 2.5.5.5
Thermal Coefficient of ϵ_r	-410	-425	Z	ppm/°C	-50 to 170°C	IPC-TM-650 2.5.5.5
Surface Resistivity	7X10 ⁷	5X10 ⁶		Mohm	A	IPC 2.5.17.1
Volume Resistivity	2X10 ⁷	5X10 ⁵		Mohm•cm	A	IPC 2.5.17.1
Youngs' Modulus						
under tension	627 (91) 517 (75)	931 (135) 559 (81)	X Y	MPa (kpsi)	A	ASTM D638 (0.1/min. strain rate)
ultimate stress	20 (2.8) 17 (2.5)	17 (2.4) 13 (1.9)	X Y	MPa (kpsi)	A	
ultimate strain	12 to 13 4 to 6	9 to 15 7 to 14	X Y	%	A	
Youngs' Modulus						
under compression	1069 (155)	2144 (311)	Z	MPa (kpsi)	A	ASTM D695 (0.05/min. strain rate)
ultimate stress	54 (7.9)	47 (6.9)	Z	MPa (kpsi)	A	
ultimate strain	33	25	Z	%		
Flexural Modulus						
	2634 (382) 1951 (283)	4364 (633) 3751 (544)	X	MPa (kpsi)	A	ASTM D790
ultimate stress	38 (5.5)	36 (5.2) 32 (4.4)	X Y	MPa (kpsi)	A	
Deformation under load	0.33 2.10	0.26 1.37	Z Z	%	24 hr/ 50°C/7MPa 24 hr/150°C/7MPa	ASTM D621
Moisture Absorption	0.05	0.05		%	24 hr/23°C, 0.050" (1.27mm) thick	IPC-TM-650, 2.6.2.1
Density	2.7	3.1				ASTM D792
Thermal Conductivity	0.49	0.78		W/m/K	23 to 100°C	ASTM D2214, Modified
Thermal Expansion	47 34, 117	24 24,47	X Y,Z	ppm/°C	0 to 100°C	ASTM 3386 (5K/min)
Td	500	500		°C TGA		ASTM D3850
Specific Heat	0.97 (0.231)	1.00 (0.239)		J/g/K (BTU/lb/°F)		Calculated
Copper Peel	14.3 (2.5)	12.3 (2.1)		pli (N/mm)	after solder float	IPC-TM-650 2.4.8
Flammability Rating	94V-0	94V-0				UL
Lead-Free Process Compatible	Yes	Yes				

[1] SI unit given first with other frequently used units in parentheses.

[2] References: APR4022.33 DJS 4019.27-32, Internal TR 2610. Tests were at 23°C unless otherwise noted. Typical values should not be used for specification limits.

[3] Dielectric constant is based on .025 dielectric thickness, one ounce electrodeposited copper on two sides.

Typical values are a representation of an average value for the population of the property. For specification values contact Rogers Corporation.

STANDARD THICKNESS:	STANDARD PANEL SIZE:	STANDARD COPPER CLADDING:
0.010" (0.254mm) 0.025" (0.64mm) 0.050" (1.27mm) 0.075" (1.90mm) 0.100" (2.50mm)	10" X 10" (254 X 254mm) 10" X 20" (254 X 508mm) 20" X 20" (508 X 508mm)	¼ oz. (8 µm) electrodeposited copper foil. ½ oz. (17µm), 1 oz. (35µm), 2 oz. (70µm) elec- trodeposited and rolled copper foil. Heavy metal claddings are available. Contact Rogers Customer Service.

CONTACT INFORMATION:

USA: Rogers Advanced Circuit Materials
 Belgium: Rogers NV - Gent
 Japan: Rogers Japan Inc.
 Taiwan: Rogers Taiwan Inc.
 Korea: Rogers Korea Inc.
 Singapore: Rogers Technologies Singapore Inc.
 China: Rogers (Shanghai) International Trading Co., Ltd

Tel: 480-961-1382 Fax: 480-961-4533
 Tel: 32-9-2353611 Fax: 32-9-2353658
 Tel: 81-3-5200-2700 Fax: 81-3-5200-0571
 Tel: 886-2-86609056 Fax: 886-2-86609057
 Tel: 82-31-716-6112 Fax: 82-31-716-6208
 Tel: 65-747-3521 Fax: 65-747-7425
 Tel: 86-21-63916088 Fax: 86-21-63915060

The information in this data sheet is intended to assist you in designing with Rogers' circuit material laminates. It is not intended to and does not create any warranties express or implied, including any warranty of merchantability or fitness for a particular purpose or that the results shown on this data sheet will be achieved by a user for a particular purpose. The user should determine the suitability of Rogers' circuit material laminates for each application.

These commodities, technology and software are exported from the United States in accordance with the Export Administration regulations. Diversion contrary to U.S. law prohibited.