

**Data Sheet**

**High Speed, Low Loss Multi-layer Materials**

Halogen-free  
**MEGTRON2**

**Laminate R-1577**  
**Prepreg R-1570**

Apr. 2020 No.20041734

# Specification / Laminate R-1577

Property		Units	Test Method	Condition	Typical Value	
THERMAL	Glass Transition Temp ( Tg )	C	DSC	As received	170	
			TMA	As received	165	
			DMA	As received	190	
	Thermal Decomposition Temp ( Td )		C	TGA	As received	380
	Time to Delam ( T288 )	Without Cu	min	IPC TM-650 2.4.24.1	As received	> 120
		With Cu	min	IPC TM-650 2.4.24.1	As received	25
	CTE : $\alpha 1$	X - axis	ppm / C	IPC TM-650 2.4.24	< Tg	14 - 16
		Y - axis	ppm / C	IPC TM-650 2.4.24	< Tg	14 - 16
		Z - axis	ppm / C	IPC TM-650 2.4.24	< Tg	34
	CTE : $\alpha 2$	Z - axis	ppm / C	IPC TM-650 2.4.24	> Tg	200
ELECTRICAL	Volume Resistivity		M $\Omega$ - cm	IPC TM-650 2.5.17.1	C-96/35/90	1 x 10 <sup>9</sup>
	Surface Resistivity		M $\Omega$	IPC TM-650 2.5.17.1	C-96/35/90	1 x 10 <sup>8</sup>
	Dielectric Constant ( Dk )	@ 1MHz	-	IPC TM-650 2.5.5.9	C-24/23/50	4.30
		@ 1GHz	-	IPC TM-650 2.5.5.9	C-24/23/50	4.14
	Dissipation Factor ( Df )	@ 1MHz	-	IPC TM-650 2.5.5.9	C-24/23/50	0.009
		@ 1GHz	-	IPC TM-650 2.5.5.9	C-24/23/50	0.010
PHYSICAL	Water Absorption		%	IPC TM-650 2.6.2.1	D-24/23	0.14
	Peel Strength	1oz	kN / m	IPC TM-650 2.4.8	As Received	1.3
	Flammability		-	UL	C-48/23/50	94V-0

Sample thickness ; 32 mil ( 0.8 mm )

\* The data in the above table are not guaranteed values.

# Specification / Laminate R-1577

1MHz - 1GHz ; IPC TM650-2.5.5.9

Nominal Thickness		Cloth Style	Typical Resin Content	Typical Dk			Typical Df		
mil	mm			1MHz	100MHz	1GHz	1MHz	100MHz	1GHz
2.0	0.05	106 x 1	72%	3.97	3.83	3.80	0.011	0.011	0.011
2.5	0.06	1080 x 1	59%	4.26	4.13	4.10	0.009	0.010	0.010
3.0	0.08	1080 x 1	64%	4.14	4.01	3.98	0.010	0.010	0.011
3.5	0.09	3313 x 1	53%	4.41	4.29	4.26	0.009	0.009	0.010
4.0	0.10	3313 x 1	57%	4.30	4.18	4.14	0.009	0.010	0.010
	0.10	106 x 2	72%	3.97	3.83	3.80	0.011	0.011	0.011
4.1	0.10	2116 x 1	46%	4.60	4.50	4.47	0.008	0.009	0.009
4.5	0.11	2116 x 1	52%	4.43	4.32	4.29	0.009	0.009	0.010
5.0	0.13	2116 x 1	56%	4.33	4.21	4.18	0.009	0.010	0.010
	0.13	1080 x 2	59%	4.26	4.13	4.10	0.009	0.010	0.010
5.1	0.13	1504 x 1	42%	4.72	4.62	4.59	0.008	0.008	0.009
6.0	0.15	1080 x 2	64%	4.14	4.01	3.98	0.010	0.010	0.011
		1078 x 2	64%	4.14	4.01	3.98	0.010	0.010	0.011
6.1	0.15	1501 x 1	45%	4.63	4.53	4.50	0.008	0.009	0.009
8.0	0.20	7628 x 1	47%	4.57	4.46	4.43	0.008	0.009	0.009
	0.20	3313 x 2	56%	4.33	4.21	4.18	0.009	0.010	0.010
8.1	0.20	2116 x 2	46%	4.60	4.50	4.47	0.008	0.009	0.009
10.0	0.25	2116 x 2	57%	4.30	4.18	4.14	0.009	0.010	0.010
12.0	0.30	1501 x 2	45%	4.63	4.53	4.50	0.008	0.009	0.009
16.0	0.40	7628 x 2	47%	4.57	4.46	4.43	0.008	0.009	0.009
20.0	0.50	7628 x 2 + 2116 x 1	47%	4.57	4.46	4.43	0.008	0.009	0.009

\* The data in the above table are not guaranteed values.

# Specification / Laminate R-1577

## 2GHz-10GHz ; IPC TM650-2.5.5.5

Nominal Thickness		Cloth Style	Typical Resin Content	Typical Dk					Typical Df				
mil	mm			2GHz	4GHz	6GHz	8GHz	10GHz	2GHz	4GHz	6GHz	8GHz	10GHz
2.0	0.05	106 x 1	72%	3.78	3.77	3.76	3.74	3.72	0.012	0.013	0.014	0.014	0.015
2.5	0.06	1080 x 1	59%	4.08	4.07	4.06	4.04	4.02	0.011	0.012	0.012	0.013	0.013
3.0	0.08	1080 x 1	64%	3.95	3.95	3.94	3.92	3.90	0.011	0.012	0.013	0.013	0.014
3.5	0.09	3313 x 1	53%	4.23	4.23	4.22	4.20	4.18	0.010	0.011	0.012	0.012	0.013
4.0	0.10	3313 x 1	57%	4.13	4.12	4.11	4.09	4.08	0.010	0.012	0.012	0.013	0.013
	0.10	106 x 2	72%	3.78	3.77	3.76	3.74	3.72	0.012	0.013	0.014	0.014	0.015
4.1	0.10	2116 x 1	46%	4.44	4.43	4.42	4.41	4.39	0.009	0.010	0.011	0.011	0.012
4.5	0.11	2116 x 1	52%	4.26	4.25	4.25	4.23	4.21	0.010	0.011	0.012	0.012	0.013
5.0	0.13	2116 x 1	56%	4.15	4.14	4.14	4.12	4.10	0.010	0.011	0.012	0.013	0.013
	0.13	1080 x 2	59%	4.08	4.07	4.06	4.04	4.02	0.011	0.012	0.012	0.013	0.013
5.1	0.13	1504 x 1	42%	4.57	4.56	4.55	4.54	4.52	0.009	0.010	0.011	0.011	0.012
6.0	0.15	1080 x 2	64%	3.95	3.95	3.94	3.92	3.90	0.011	0.012	0.013	0.013	0.014
		1078 x 2	64%	3.95	3.95	3.94	3.92	3.90	0.011	0.012	0.013	0.013	0.014
6.1	0.15	1501 x 1	45%	4.47	4.46	4.45	4.44	4.42	0.009	0.010	0.011	0.012	0.012
8.0	0.20	7628 x 1	47%	4.41	4.40	4.39	4.38	4.36	0.010	0.011	0.011	0.012	0.012
	0.20	3313 x 2	56%	4.15	4.14	4.14	4.12	4.10	0.010	0.011	0.012	0.013	0.013
8.1	0.20	2116 x 2	46%	4.44	4.43	4.42	4.41	4.39	0.009	0.010	0.011	0.011	0.012
10.0	0.25	2116 x 2	57%	4.13	4.12	4.11	4.09	4.08	0.010	0.012	0.012	0.013	0.013
12.0	0.30	1501 x 2	45%	4.47	4.46	4.45	4.44	4.42	0.009	0.010	0.011	0.012	0.012
16.0	0.40	7628 x 2	47%	4.41	4.40	4.39	4.38	4.36	0.010	0.011	0.011	0.012	0.012
20.0	0.50	7628 x 2 + 2116 x 1	47%	4.41	4.40	4.39	4.38	4.36	0.010	0.011	0.011	0.012	0.012

\* The data in the above table are not guaranteed values.

# Specification / Prepreg R-1570

1MHz - 1GHz ; IPC TM650-2.5.5.9

Cloth Style	Typical Resin Content	Typical Thickness (um)	Typical Dk			Typical Df		
			1MHz	100MHz	1GHz	1MHz	100MHz	1GHz
1037	77%	59	3.85	3.70	3.67	0.011	0.012	0.012
106	68%	43	4.05	3.92	3.89	0.010	0.011	0.011
	72%	50	3.97	3.83	3.80	0.011	0.011	0.011
	76%	59	3.89	3.75	3.72	0.011	0.012	0.012
1067	67%	52	4.07	3.94	3.91	0.010	0.011	0.011
	71%	61	3.99	3.85	3.82	0.011	0.011	0.011
1080	65%	74	4.12	3.98	3.95	0.010	0.011	0.011
	69%	86	4.03	3.89	3.86	0.010	0.011	0.011
	73%	100	3.95	3.81	3.78	0.011	0.011	0.012
1078	64%	74	4.14	4.01	3.98	0.010	0.010	0.011
	68%	84	4.05	3.92	3.89	0.010	0.011	0.011
3313	58%	105	4.28	4.16	4.13	0.009	0.010	0.010
	64%	125	4.14	4.01	3.98	0.010	0.010	0.011
2116	55%	123	4.35	4.23	4.20	0.009	0.010	0.010
	58%	133	4.28	4.16	4.13	0.009	0.010	0.010
1504	51%	158	4.46	4.35	4.32	0.009	0.009	0.009
1501	51%	176	4.46	4.35	4.32	0.009	0.009	0.009
7628	48%	207	4.54	4.43	4.40	0.008	0.009	0.009
	51%	223	4.46	4.35	4.32	0.009	0.009	0.009
	54%	241	4.38	4.26	4.23	0.009	0.009	0.010

\* The data in the above table are not guaranteed values.

# Specification / Prepreg R-1570

2GHz-10GHz ; IPC TM650-2.5.5.5

Cloth Style	Typical Resin Content	Typical Thickness ( um )	Typical Dk					Typical Df				
			2GHz	4GHz	6GHz	8GHz	10GHz	2GHz	4GHz	6GHz	8GHz	10GHz
1037	77%	59	3.65	3.64	3.63	3.61	3.58	0.012	0.013	0.014	0.015	0.015
106	68%	43	3.86	3.85	3.85	3.83	3.81	0.011	0.013	0.013	0.014	0.014
	72%	50	3.78	3.77	3.76	3.74	3.72	0.012	0.013	0.014	0.014	0.015
	76%	59	3.70	3.69	3.68	3.66	3.60	0.012	0.013	0.014	0.015	0.015
1067	67%	52	3.89	3.88	3.87	3.85	3.83	0.011	0.012	0.013	0.014	0.014
	71%	61	3.80	3.79	3.78	3.77	3.74	0.011	0.013	0.014	0.014	0.015
1080	65%	74	3.93	3.92	3.91	3.90	3.88	0.011	0.012	0.013	0.014	0.014
	69%	86	3.84	3.83	3.82	3.80	3.79	0.011	0.013	0.013	0.014	0.014
	73%	100	3.76	3.75	3.74	3.72	3.70	0.012	0.013	0.014	0.014	0.015
1078	64%	74	3.95	3.95	3.94	3.92	3.90	0.011	0.012	0.013	0.013	0.014
	68%	84	3.86	3.85	3.85	3.83	3.81	0.011	0.013	0.013	0.014	0.014
3313	58%	105	4.10	4.09	4.08	4.07	4.05	0.010	0.012	0.012	0.013	0.013
	64%	125	3.95	3.95	3.94	3.92	3.90	0.011	0.012	0.013	0.013	0.014
2116	55%	123	4.18	4.17	4.16	4.15	4.13	0.010	0.011	0.012	0.013	0.013
	58%	133	4.10	4.09	4.08	4.07	4.05	0.010	0.012	0.012	0.013	0.013
1504	51%	158	4.29	4.28	4.27	4.26	4.24	0.010	0.011	0.012	0.012	0.012
1501	51%	176	4.29	4.28	4.27	4.26	4.24	0.010	0.011	0.012	0.012	0.012
7628	48%	207	4.38	4.37	4.36	4.35	4.33	0.010	0.011	0.011	0.012	0.012
	51%	223	4.29	4.28	4.27	4.26	4.24	0.010	0.011	0.012	0.012	0.012
	54%	241	4.21	4.20	4.19	4.17	4.16	0.010	0.011	0.012	0.012	0.013

\* The data in the above table are not guaranteed values.

## ++ Before purchase ++

### 【Notes before you use】

- Please verify the suitability and fitness for intended application by quality testing, evaluation or other means at your own option before any adoption, use or change of use conditions of a product listed in the datasheet.
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