

## **Data Sheet**

**Ultra-low transmission loss, highly heat-resistant  
multi-layer circuit board materials**

**Laminate V-5795  
Prepreg V-5690**

# Specification / Laminate V-5795(N) & V-5795(U)

Property		Units	Test Method	Condition	Typical Value		
					R-5795(N) Low-Dk glass	R-5795(U) Ultra Low-Df glass	
THERMAL	Glass Transition Temp (Tg)		C	DMA	As received	220	220
	Thermal Decomposition Temp ( Td )		C	TGA	As received	370	370
	Time to Delam ( T288 )	With Cu	Min	IPC TM-650 2.4.24.1	As received	> 120	> 120
	CTE : $\alpha 1$	X – axis	ppm / C	IPC TM-650 2.4.24	< Tg	17 ~ 20	17 - 20
		Y – axis	ppm / C	IPC TM-650 2.4.24	< Tg	17 ~ 20	17 - 20
		Z – axis	ppm / C	IPC TM-650 2.4.24	< Tg	50	50
CTE : $\alpha 2$	Z – axis	ppm / C	IPC TM-650 2.4.24	> Tg	270	270	
ELECTRICAL	Dielectric Constant ( Dk )	@ 14GHz	-	* Note 1	C-24/23/50	3.13	3.08
	Dissipation Factor ( Df )	@ 14GHz	-	* Note 1	C-24/23/50	0.0016	0.0012
PHYSICAL	Water Absorption		%	IPC TM-650 2.6.2.1	D-24/23	0.06	0.06
	Peel Strength	1oz ( H-VLP3 )	kN / m	IPC TM-650 2.4.8	As Received	0.7	0.7
	Flammability		-	UL	C-48/23/50	94V-0	94V-0

Sample thickness : 30 mil = 0.750 mm (1078 x 10ply)

Note 1 : Balanced-type Circular Disk Resonance Method [ IEC 63185 (2020) ]

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

# Specification / Laminate V-5795(N) : Low-Dk glass

14-60GHz ; Balanced-type Circular Disk Resonance Method [ IEC 63185 (2020) ]

Core Type	Actual Thickness		Cloth Style	ply	Typical Resin Content (%)	Typical Dk				
	mil	mm				14GHz	25GHz	37GHz	49GHz	60GHz
2	2.0	0.050	1035	1	67	3.11	3.11	3.11	3.11	3.11
2.6	2.6	0.065	1078	1	61	3.19	3.19	3.19	3.19	3.19
3	3.0	0.075	1078	1	65	3.13	3.13	3.13	3.13	3.13
3	3.0	0.075	1035	1	77	2.99	2.99	2.99	2.99	2.99
3.5	3.5	0.090	1078	1	70	3.07	3.07	3.07	3.07	3.07
4	3.9	0.100	1035	2	67	3.11	3.11	3.11	3.11	3.11
4	3.9	0.100	1078	1	73	3.03	3.03	3.03	3.03	3.03
4	3.9	0.100	2013	1	56	3.26	3.26	3.26	3.26	3.26
4.5	4.5	0.114	1035	2	70	3.07	3.07	3.07	3.07	3.07
5	5.0	0.127	1078	2	61	3.19	3.19	3.19	3.19	3.19
5	5.1	0.130	1035	2	74	3.02	3.02	3.02	3.02	3.02
5	4.9	0.125	2116	1	55	3.27	3.27	3.27	3.27	3.27
6	5.7	0.146	1078	2	65	3.13	3.13	3.13	3.13	3.13
6	5.9	0.150	1035	2	77	2.99	2.99	2.99	2.99	2.99
7	7.0	0.178	1078	2	70	3.07	3.07	3.07	3.07	3.07
8	7.9	0.200	2013	2	56	3.26	3.26	3.26	3.26	3.26
10	9.8	0.250	2116	2	55	3.27	3.27	3.27	3.27	3.27
12	11.8	0.300	2013	3	56	3.26	3.26	3.26	3.26	3.26
16	15.7	0.400	2013	4	56	3.26	3.26	3.26	3.26	3.26
20	19.7	0.500	2116	4	55	3.27	3.27	3.27	3.27	3.27
25	24.6	0.625	2116	5	55	3.27	3.27	3.27	3.27	3.27
30	29.5	0.750	2116	6	55	3.27	3.27	3.27	3.27	3.27

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



# Specification / Laminate V-5795(N) : Low-Dk glass

14-60GHz ; Balanced-type Circular Disk Resonance Method [ IEC 63185 (2020) ]

Core Type	Actual Thickness		Cloth Style	ply	Typical Resin Content(%)	Typical Df				
	mil	mm				14GHz	25GHz	37GHz	49GHz	60GHz
2	2.0	0.050	1035	1	67	0.0015	0.0017	0.0019	0.0021	0.0023
2.6	2.6	0.065	1078	1	61	0.0017	0.0019	0.0021	0.0023	0.0025
3	3.0	0.075	1078	1	65	0.0016	0.0018	0.0020	0.0022	0.0024
3	3.0	0.075	1035	1	77	0.0014	0.0015	0.0017	0.0019	0.0020
3.5	3.5	0.090	1078	1	70	0.0015	0.0017	0.0019	0.0021	0.0022
4	3.9	0.100	1035	2	67	0.0015	0.0017	0.0019	0.0021	0.0023
4	3.9	0.100	1078	1	73	0.0014	0.0016	0.0018	0.0020	0.0022
4	3.9	0.100	2013	1	56	0.0018	0.0020	0.0022	0.0024	0.0026
4.5	4.5	0.114	1035	2	70	0.0015	0.0017	0.0019	0.0021	0.0022
5	5.0	0.127	1078	2	61	0.0017	0.0019	0.0021	0.0023	0.0025
5	5.1	0.130	1035	2	74	0.0014	0.0016	0.0018	0.0020	0.0021
5	4.9	0.125	2116	1	55	0.0018	0.0020	0.0022	0.0025	0.0027
6	5.7	0.146	1078	2	65	0.0016	0.0018	0.0020	0.0022	0.0024
6	5.9	0.150	1035	2	77	0.0014	0.0015	0.0017	0.0019	0.0020
7	7.0	0.178	1078	2	70	0.0015	0.0017	0.0019	0.0021	0.0022
8	7.9	0.200	2013	2	56	0.0018	0.0020	0.0022	0.0024	0.0026
10	9.8	0.250	2116	2	55	0.0018	0.0020	0.0022	0.0025	0.0027
12	11.8	0.300	2013	3	56	0.0018	0.0020	0.0022	0.0024	0.0026
16	15.7	0.400	2013	4	56	0.0018	0.0020	0.0022	0.0024	0.0026
20	19.7	0.500	2116	4	55	0.0018	0.0020	0.0022	0.0025	0.0027
25	24.6	0.625	2116	5	55	0.0018	0.0020	0.0022	0.0025	0.0027
30	29.5	0.750	2116	6	55	0.0018	0.0020	0.0022	0.0025	0.0027

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



# Specification / Prepreg V-5690(N) : Low-Dk glass

14-60GHz ; Balanced-type Circular Disk Resonance Method [ IEC 63185 (2020) ]

Cloth Style	Resin Content(%)	Typical Thickness	Typical Dk				
			14GHz	25GHz	37GHz	49GHz	60GHz
1035	69*	54um	3.08	3.08	3.08	3.08	3.08
	72	60um	3.04	3.04	3.04	3.04	3.04
	75	68um	3.01	3.01	3.01	3.01	3.01
	77	75um	2.99	2.99	2.99	2.99	2.99
1078	66	78um	3.12	3.12	3.12	3.12	3.12
	70	90um	3.07	3.07	3.07	3.07	3.07
	74	105um	3.02	3.02	3.02	3.02	3.02
	77	121um	2.99	2.99	2.99	2.99	2.99
2013	57	101um	3.24	3.24	3.24	3.24	3.24
	60	110um	3.20	3.20	3.20	3.20	3.20
2116	58	134um	3.23	3.23	3.23	3.23	3.23

\*This construction is under development.

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# Specification / Prepreg V-5690(N) : Low-Dk glass

14-60GHz ; Balanced-type Circular Disk Resonance Method [ IEC 63185 (2020) ]

Cloth Style	Resin Content(%)	Typical Thickness	Typical Df				
			14GHz	25GHz	37GHz	49GHz	60GHz
1035	69*	54um	0.0015	0.0017	0.0019	0.0021	0.0023
	72	60um	0.0014	0.0016	0.0018	0.0020	0.0022
	75	68um	0.0014	0.0016	0.0017	0.0019	0.0021
	77	75um	0.0014	0.0015	0.0017	0.0019	0.0020
1078	66	78um	0.0016	0.0017	0.0020	0.0022	0.0023
	70	90um	0.0015	0.0017	0.0019	0.0021	0.0022
	74	105um	0.0014	0.0016	0.0018	0.0020	0.0021
	77	121um	0.0014	0.0015	0.0017	0.0019	0.0020
2013	57	101um	0.0017	0.0020	0.0022	0.0024	0.0026
	60	110um	0.0017	0.0019	0.0021	0.0023	0.0025
2116	58	134um	0.0017	0.0019	0.0022	0.0024	0.0026

\*This construction is under development.

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

# Specification / Laminate V-5795(U) : Ultra Low Df glass

14-60GHz ; Balanced-type Circular Disk Resonance Method [ IEC 63185 (2020) ]

Core Type	Actual Thickness		Cloth Style	ply	Typical Resin Content(%)	Typical Dk				
	mil	mm				14GHz	25GHz	37GHz	49GHz	60GHz
2	2.0	0.050	1035	1	68	3.05	3.05	3.05	3.05	3.05
2.6	2.6	0.065	1078	1	62	3.12	3.12	3.12	3.12	3.12
3	3.0	0.075	1078	1	66	3.08	3.08	3.08	3.08	3.08
3	3.0	0.075	1035	1	78	2.95	2.95	2.95	2.95	2.95
3.5	3.5	0.090	1078	1	71	3.02	3.02	3.02	3.02	3.02
4	3.9	0.100	1035	2	68	3.05	3.05	3.05	3.05	3.05
4	3.9	0.100	1078	1	74	2.99	2.99	2.99	2.99	2.99
4.5	4.5	0.114	1035	2	71	3.02	3.02	3.02	3.02	3.02
5	5.0	0.127	1078	2	62	3.12	3.12	3.12	3.12	3.12
5	5.1	0.130	1035	2	75	2.98	2.98	2.98	2.98	2.98
6	5.7	0.146	1078	2	66	3.08	3.08	3.08	3.08	3.08
6	5.9	0.150	1035	2	78	2.95	2.95	2.95	2.95	2.95
7	7.0	0.178	1078	2	71	3.02	3.02	3.02	3.02	3.02

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# Specification / Laminate V-5795(U) : Ultra Low Df glass

14-60GHz ; Balanced-type Circular Disk Resonance Method [ IEC 63185 (2020) ]

Core Type	Actual Thickness		Cloth Style	ply	Typical Resin Content(%)	Typical Df				
	mil	mm				14GHz	25GHz	37GHz	49GHz	60GHz
2	2.0	0.050	1035	1	68	0.0012	0.0014	0.0016	0.0018	0.0020
2.6	2.6	0.065	1078	1	62	0.0013	0.0015	0.0017	0.0019	0.0021
3	3.0	0.075	1078	1	66	0.0012	0.0014	0.0016	0.0018	0.0020
3	3.0	0.075	1035	1	78	0.0011	0.0013	0.0015	0.0017	0.0018
3.5	3.5	0.090	1078	1	71	0.0012	0.0014	0.0016	0.0018	0.0019
4	3.9	0.100	1035	2	68	0.0012	0.0014	0.0016	0.0018	0.0020
4	3.9	0.100	1078	1	74	0.0012	0.0013	0.0015	0.0017	0.0019
4.5	4.5	0.114	1035	2	71	0.0012	0.0014	0.0016	0.0018	0.0019
5	5.0	0.127	1078	2	62	0.0013	0.0015	0.0017	0.0019	0.0021
5	5.1	0.130	1035	2	75	0.0012	0.0013	0.0015	0.0017	0.0019
6	5.7	0.146	1078	2	66	0.0012	0.0014	0.0016	0.0018	0.0020
6	5.9	0.150	1035	2	78	0.0011	0.0013	0.0015	0.0017	0.0018
7	7.0	0.178	1078	2	71	0.0012	0.0014	0.0016	0.0018	0.0019

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



# Specification / Prepreg V-5690(U) : Ultra Low Df glass

14-60GHz ; Balanced-type Circular Disk Resonance Method [ IEC 63185 (2020) ]

Cloth Style	Resin Content(%)	Typical Thickness	Typical Dk				
			14GHz	25GHz	37GHz	49GHz	60GHz
1035	70*	54um	3.03	3.03	3.03	3.03	3.03
	73	61um	3.00	3.00	3.00	3.00	3.00
	76	69um	2.97	2.97	2.97	2.97	2.97
	78	76um	2.95	2.95	2.95	2.95	2.95
1078	67	77um	3.07	3.07	3.07	3.07	3.07
	71	89um	3.02	3.02	3.02	3.02	3.02
	75	104um	2.98	2.98	2.98	2.98	2.98
	78	120um	2.95	2.95	2.95	2.95	2.95

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# Specification / Prepreg V-5690(U) : Ultra Low Df glass

14-60GHz ; Balanced-type Circular Disk Resonance Method [ IEC 63185 (2020) ]

Cloth Style	Resin Content(%)	Typical Thickness	Typical Df				
			14GHz	25GHz	37GHz	49GHz	60GHz
1035	70*	54um	0.0012	0.0014	0.0016	0.0018	0.0020
	73	61um	0.0012	0.0014	0.0015	0.0017	0.0019
	76	69um	0.0012	0.0013	0.0015	0.0017	0.0019
	78	76um	0.0011	0.0013	0.0015	0.0017	0.0018
1078	67	77um	0.0012	0.0014	0.0016	0.0018	0.0020
	71	89um	0.0012	0.0014	0.0016	0.0018	0.0019
	75	104um	0.0012	0.0013	0.0015	0.0017	0.0019
	78	120um	0.0011	0.0013	0.0015	0.0017	0.0018

\*This construction is under development.

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