

DATA SHEET
RIGID LAMINATES
ANSI GRADE FR4
IGAV FR95 Thickness $\geq 0,50$ mm (Copper included)
Copper 18, 35, 70 μ
Other copper thicknesses on request
IEC designation : IEC EN 60249-2-5-FVO
IPC designation : type L21

TESTS	Specifications IPC 4101A	Specifications IEC EN-60249.2.5	IPC Limits	IEC Limits	PIAD Values IPC spec.	Piad Values IEC spec.
Surface inspection	3.8.3	-	Class A*	Normal	Class A*	Normal*
Permittivity at 1MHz	3.11.1.1	2.7	<5,4	$\leq 5,5$	4,5+/-0,1	4,7+/-0,1
Loss Tangent (tangent Δ at 1 MHz)	3.11.1.2	2.7	<0,035	<0,035	0,018+/-0,002	0,018+/-0,002
Surface Resistivity C-96/35/90	3.11.1.4	2.2Surface Resistance	$>10^4 M\Omega$	$>5 \times 10^4 M\Omega$	3×10^6	3×10^5
Surface Resistivity E-24/125	3.11.1.4	2.9.1Surface Resistance	$>10^3 M\Omega$	$>10^3 M\Omega$	4×10^5	5×10^3
Volume Resistivity C-96/35/90	3.11.1.3	2.3	$>10^6 M\Omega$ -cm	$>10^4 M\Omega$ -m	6×10^7	10^8
Volume Resistivity E-24/125	3.11.1.3	2.9.1	$>10^3 M\Omega$ -cm	$>10^3 M\Omega$ -m	$1,6 \times 10^5$	10^5
Dielectric Breakdown	3.11.1.6	-	>40KV	-	58	-
Peel strength After thermal stress**	3.9.1.1.1	3.6.2.3	$\geq 1,05$ N/mm	$\geq 1,4$ N/mm	1,57	2,1
Thermal stress at 288°C	3.10.1.2	3.7.2.3	>10 sec.	>20 sec.	>60	>60
Method	Specification	Spec.Limits	PIAD Values	Thickness according to IPC 4101A Class L if not otherwise required. Standard build up as per enclosed data sheet if not otherwise required. These data are average values of our current production and are based on reliable analytical methods.They can only serve as guideline and not give rise to any rights under warranty terms.The end user should always verify the suitability of PIAD products for processing and final applications.		
CTE Z axis expansion up to Tg	IPC TM 650	-	50 ppm/°C			
Flammability	UL 94	Class	94 V-0			
Glass Transition	IPC TM 650	-	137+/-5°C			
Dimensional stability***	IEC EN 60249-2-5.7	≤ 300 ppm	200ppm			
CTI	IEC 60112	≥ 200	200passed			
*if not otherwise specified **with ref.to 35/35 μ STD ***With ref.to 1,6 mm 35/35 μ STD						