

F4B-1/2(M:1-GT)Woven-glass PTFE Copper-clad Substrate

This substrate of good quality is widely and specially used to microwave printed-circuits. It is made from import highly rated materials and completed through high temperature, high-pressure, baking and sintering processes according To the electrical requirements of a microwave circuit.

※Technical Specifications:

1、 Exterior Looks:In conformity to the exterior looks,performances of microwave printed-circuit substrate materials specified by both the National and Military Standards.

2、 Normal Dimensions(mm):840×840 ; 600×500 ; 500×500 ; 500×430 ; 380×350 ; 300×250

3、 Thickness of Copper-clad(mm):0.035 or 0.018

4、 Thickness and Tolerance:

a. The normal thickness of copper-clad includes that of the copper sheets on both sides of the substrates.

b. Thickness and Tolerance

Thickness(mm)	0.17,0.25	0.5,0.8,1.0	1.5,2.0	3.0,4.0,5.0
Tolerance(mm)	±0.01	±0.03	±0.05	±0.06

c. Specified dimensions can be assigned according to the requirements of customers' circuit design.

5、 Metamucil Properties:

a. Flexibility Factory:

Thickness(mm)	Maxi am Flexibility Factor(mm/mm)		
	Laminate Board With smooth Surfaace	Single-sided Copper-clad	Double-sided Copper-clad
0.25-0.5	0.03	0.05	0.025
0.8-1.0	0.025	0.03	0.020
1.5-2.0	0.020	0.025	0.015
3.0-5.0	0.015	0.020	0.010

b. Shearing and punching Properties:

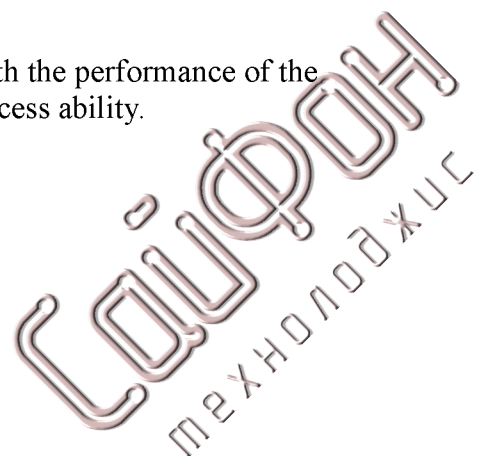
Shearing: < 1mm thickness without burrs after shearing, the minimum separation between two holes punched being 0.55without peeling off.

≥1mm thickness without burrs after , the minimum separation between two holes punched being 1.10 without peeling off.

c.Copper Peel Strength: ≥15N/cm(in normal condition).

≥12N/cm (being Kept in constant damp and hot and 260°C±2°C solder conditions for 20seconds without blisters and peeling off)

d.Chemical Properties:Printed-circuits made by photo-fabrication with the performance of the dielectric materials of the substrate unchanged and moralizing holes process ability.



e.Physical and Electrical Properties:See"Table of Performance"Characteristics of Main Substrates affianced.

Number	Item	Test Condition	Unit	Target value	
1	Gravity	In normal	g/cm ²	2.2 ~ 2.3	
2	Water Absorption	Soaking in Distilled water of 20±2°C for 24 hours.	%	≤0.02	
3	Operating Temperature	High AND Low Temperature Oven	°C	-50 ~ +260	
4	Heat Conduction Coefficient		Kcal/m.hour°C	0.8	
5	Linear Expansion Coefficient	Arise of 96°C in Temperature/hour	×1	≤5×10 ⁻⁵	
6	Shrinkage	To be boiled in Boiling water for 2 hors.	%	0.0002	
7	Surface Insulation Resistance	500V direct current	normal	M.Ω	≥1×10 ⁻⁴
			const damp and hot		≥1×10 ⁻³
8	Bulk Resistance	In normal conditio	MΩ.cm	≥1×10 ⁻⁶	
		const damp and hot		≥1×10 ⁻⁵	
9	Resistance Between Plugs	500V direct current	In normal conditio	MΩ	≥1×10 ⁻⁵
			In constant damp condition		≥1×10 ⁻³
10	Surface Electric Strength	In normal conditio	δ=1mm(kv/m m)	≥1.2	
		In constant damp condition		≥1.1	
11	Dielectric Constant	10GHz	εr	2,55(±2%)	
				2,65(±2%)	
12	Dielectric Constant Tangent	10GHz	tgδ	≤1×10 ⁻³	