



Advance Materials Corporation

聯致科技股份有限公司

Specification of glass fabric base laminate for
xxx Electronics Corp.

AMC CORPORATION 聯致科技股份有限公司		Date: 2016/07/18		
		Specification of Copper Clad Laminate		
		Specification of AMC-820WHFE		
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Specification of Copper Clad Laminate Scope

1.Scope

This specification covers qualification and performance of AMC Copper Clad Laminate.

2.Purpose

The purpose of this specification is to provide requirements and performance of CCL in order to achieve and maintain a state of quality control and to assess and improve process capability.

3.Applicable Documents

- 3.1 IPC-MF-150F Metal Foil for Printed Wiring Boards
- 3.2 MIL-S-13949H Military Specification
- 3.3 IPC-4101 Specification for Base Materials for Rigid and Multilayer Printed Boards
- 3.4 IPC-RB-276 Qualification and Performance Specification for Rigid Printed Boards
- 3.5 IPC-6012 Qualification and Performance Specification for Rigid Printed Boards
- 3.6 JIS C 6480 General Rules for Copper-covered-laminated-board for Printed Circuit Boards
- 3.7 JIC C 6481 Test Methods for Copper-covered-laminated-board for Printed Circuit Boards
- 3.8 IPC-TM-650 Test Methods Manual
- 3.9 IPC-A-600D Acceptability for Printed Boards
- 3.10 UL 746E Standard for Polymeric Materials
- 3.11 UL 796 Standard for Printed-Wiring Boards
- 3.12 UL 94 Standard for Test for Flammability of Plastic materials for Parts in Devices and Application

4.General

Base Material	
Laminate	
Grade Name	AMC-820WHFE
ANSI Grade	NO ANSI
Minimum Thickness	0.06 mm
UL HB Flammability Class	HB

5. Specification

5.1 Copper foil

Copper foil thickness and tolerance shall be in accordance with Table 1

Copper foil is electrolytic copper foil and the purity is Min. 99.8%

Table 1. Copper foil thickness and tolerance

Nominal Thickness (μm)	Weight (g/m^2)	Tolerance (%)
12	107	± 10
18	152	± 10
35	305	± 10

Note : Thickness is measured by weight

5.2 External appearance

Unless otherwise specified, the specifications specified below are not applicable to the area outside the working area of panels. The working area is considered the area inside a 8 mm border of panels.

Table 2. External Appearance

1. Copper foil surface													
Pinhole	There shall be no pinhole with a diameter greater than 0.10 mm and the number of pinholes shall not exceed one with diameter between 0.05mm and 0.10 mm in any area of 300x300mm.												
Scratches	There shall be no scratches with a depth of greater than 4 μm and the length is a maximum of 1.00 mm in any area of 300x300mm.												
Pits and Dents	There shall be no pits and dents with a diameter greater than 1.00 mm and the total point count shall be less than 30pv in any area of 300x300mm , the depth of pits and dents shall be less than 4 μm . The following point value system shall be used to determine point count. <table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Longest dimension</th> <th>Point Value</th> </tr> </thead> <tbody> <tr> <td>0.13-0.25 mm</td> <td>0</td> </tr> <tr> <td>0.26-0.50 mm</td> <td>2</td> </tr> <tr> <td>0.51-0.75 mm</td> <td>4</td> </tr> <tr> <td>0.76-1.00 mm</td> <td>7</td> </tr> <tr> <td>1.0 mm or over</td> <td>30</td> </tr> </tbody> </table>	Longest dimension	Point Value	0.13-0.25 mm	0	0.26-0.50 mm	2	0.51-0.75 mm	4	0.76-1.00 mm	7	1.0 mm or over	30
Longest dimension	Point Value												
0.13-0.25 mm	0												
0.26-0.50 mm	2												
0.51-0.75 mm	4												
0.76-1.00 mm	7												
1.0 mm or over	30												
Other	There shall be no blisters, wrinkles, cracks, oxidation, foreign inclusions, foreign material, and smears of resin or rust that is harmful in practical use.												
2. Laminate surface													
	With a flat and smooth surface, there shall be no blisters, cracks, laminate void, dry, bad edge, dust that is harmful in practical use, uneven coloring, scratches, unevenness or streak patterns.												
3. Etched surface													
	There shall be no scratches that are harmful in practical use, nor any copper foreign material island, uneven coloring and streaks.												

5.3 Thickness of laminates

Thickness and tolerance shall be in accordance with Table 3

Table 3. Thickness and tolerance of laminates

Nominal Thickness	THICKNESS ALLOWANCE		
	COPPER FOIL 12 um	COPPER FOIL 18 um	COPPER FOIL 35um
mm			
0.06	0.085±0.02	-	-
0.10	0.125±0.03	0.135±0.03	0.170±0.03
0.13	0.155±0.03	0.165±0.03	0.200±0.03
0.15	0.175±0.03	0.185±0.03	0.220±0.03
0.20	0.225±0.03	0.235±0.03	0.270±0.03
0.25	0.275±0.04	0.285±0.04	0.320±0.04
0.30	0.325±0.04	0.335±0.04	0.370±0.04
0.40	0.425±0.04	0.435±0.05	0.470±0.05
0.50	0.525±0.06	0.535±0.06	0.570±0.06
0.60	0.625±0.07	0.635±0.07	0.670±0.07
0.80	0.825±0.10	0.835±0.10	0.870±0.12
0.90	0.925±0.10	0.935±0.10	0.970±0.12
1.00	1.025±0.10	1.035±0.10	1.07±0.13
1.10	1.125±0.12	1.135±0.12	1.17±0.13
1.20	1.225±0.12	1.235±0. 0.12	1.27±0.13

6. Properties

6.1 Copper Clad Laminate

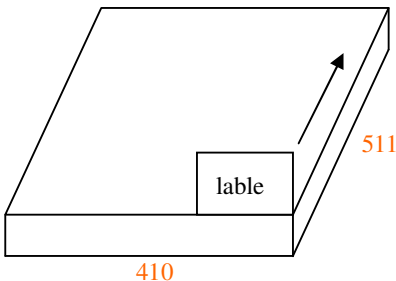
Characteristics	Unit	Test Method	Test Condition	AMC-820 WHFE
Thermal				
Glass Transition Temp. Tg(DMA)	°C	IPC-TM-650-2.4.25A	DMA	≥ 195°C
Solder Float.	min	IPC-4101B- 2.4.13.1	280°C	>10
Thermal Stress.	cycle	IPC-4101B- 2.4.13.1	288°C/10sec	>20
Electrical				
Dielectric Constant(DK)at MHz	—	IPC-TM-650-2.5.5.3C	C-24/23/50	<8.0
Dissipation Factor at 1MHz	—	IPC-TM-650-2.5.5.3C	C-24/23/50	<0.06
Volume Resistivity min.	Ω-cm	IPC-TM-650-2.5.17.1	C-96/35/90F E-24/125	Min.1.0×10 ¹²
Surface Resistivity min.	Ω	IPC-TM-650-2.5.17.1	C-96/35/90F E-24/125	Min.1.0×10 ¹⁰
Dielectric Breakdown	KV	IPC-TM-650-2.5.7	D-48/50	60
Physical				
Peel Strength, 1/3oz	KN/ m	IPC-TM-650-2.4.8	A	Min. 0.7
Peel Strength, 1/2oz	KN/ m	IPC-TM-650-2.4.8	A	Min.0.8
Peel Strength, 1oz	KN/ m	IPC-TM-650-2.4.8	A	Min.1.05
Warpage and Twist	%	IPC-TM-650-2.4.22	A	<0.75
Water Absorption	%	IPC-TM-650-2.6.2.1A	D24/23	<0.8
Dimensional Stability max	%	IPC-TM-650-2.4.39A	E-1/2/170°C	<0.05
Flammability	—	UL HB	A	HB
Anti-Chemical	%	IPC-TM-650-2.3.4.3	A	<0.5

6.2 Laminate Size

unit : mm

	Size Warp X Fill	Tolerance	Cross Deviate
Panel	508*508	+3,-0	±3
	457*610		
	508*405		
	508*610		
	511*410		
	511*413		
	512*410		
	515*415		
	513*413		

Note) Warp direction should be mark in label to the right.



6.3 The Edging angle way to execute the job according to customer requirements

7. Quality Assurance

7.1 All of root material are sampling inspected by IQC per each shipping lot.

7.2 The copper clad laminate are subjected to etched test by QA inspector per each pressing lot.

7.3 The copper clad laminate is subjected to a 100% external appearance inspection.

7.4 Test report

7.4.1 Test report includes the following items:

- Copper Clad Laminate
- Laminate thickness
- Appearance
- Wrap / Twist (Etching)
- Solder Float(288°C)

Peel Strength
Water absorption
Dissipation factor
Relative Permittivity
Flammability
Insulation resistance

7.4.2 AMC Corporation will send test report by each order.

7.5 Reliability test report

7.5.1 The reliability test report includes the following items

Volume resistivity
Surface resistance
Insulation resistance
Dielectric constant
Dissipation factor
Water absorption
Linear expansion
Flammability

7.6 Reference sample

AMC Corporation will keep one panel copper clad laminate per each pressing lot as reference sample for a period of six months.

7.7 Production lot identification

The lot identification number is established to permit tractability of CCL with regards to Major production operations such as press lot on treating lot.

7.8 Production storage

Copper clad laminate storage time is **1** years at the room temperature . (< 45°C)

8. Process Change

AMC Corporation will seek approval from customer prior to any changes to the process or materials used.

9. Packaging

9.1 Preservation

9.1.1 The CCL shall be interleaved with paper to prevent abrasion.

9.1.2 The CCL shall be unit packed and sealed in polyethylene bags in a manner that Will afford adequate protection against moisture, deterioration, and physical damage during shipment and storage.

Note) Packing method see attachment.

9.2 Packing and labeling

9.2.1 The CCL shall have a label attached to the package and exterior container with the following information.

- CCL
- Manufacturer
- Grade
- Thickness
- Copper Foil
- Size
- Quantity
- Lot no

9.3 Marking :

Interpretation of the lot marking

