SPECIFICATION FOR APPROVAL

PRODUCT NAME： Yellow Coverlay

PRODUCT SPEC.： ACYS252500TD2

DATE ： 2022.4.20

Supplier: Hubei OMAR Electronics Technology Co., Ltd.

Purchaser:

Enactment	Audit
Xiaohu zhu	Chengying Yan

Audit	Approval

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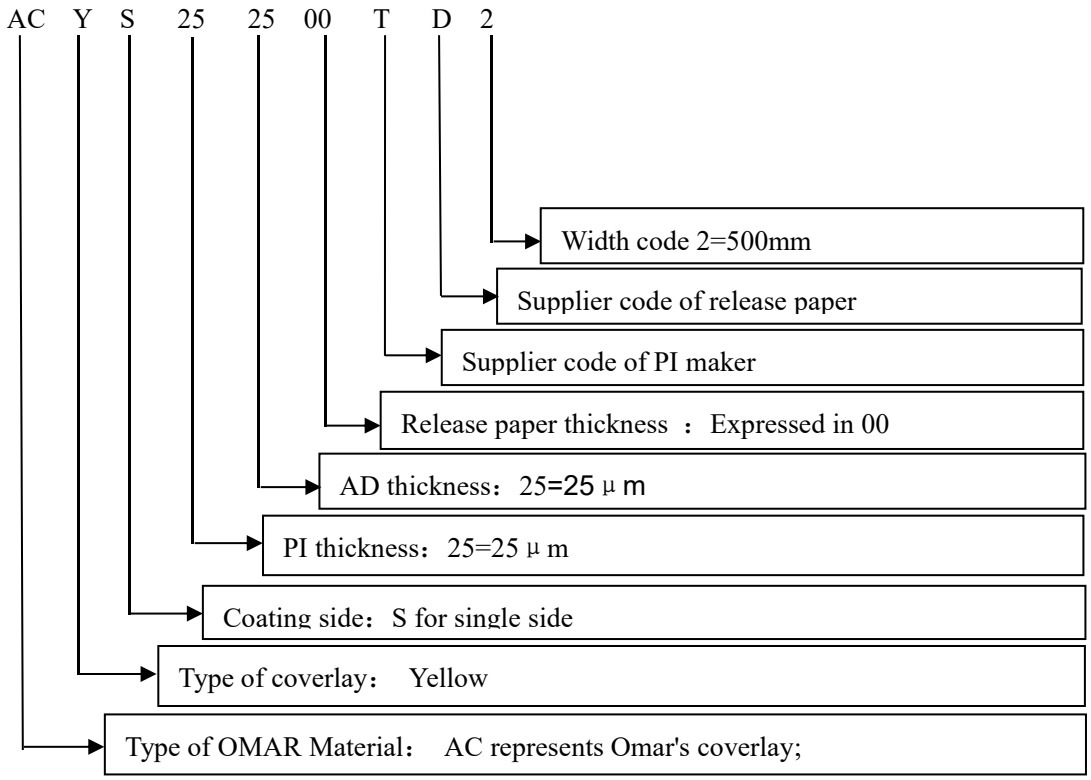
edition	The fourth edition	The revision date	2022.4.20

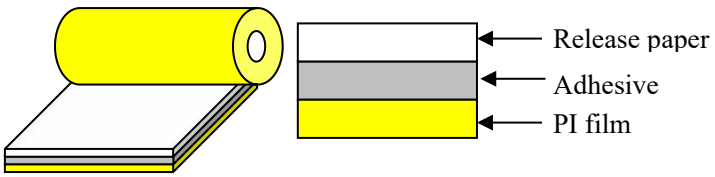
Contents

1.Product code



2.Product structure

1.The product is mainly composed of PI film, adhesive and release paper.
As shown in the following figure:



No.	Product	PI thickness（μm）	Adhesive thickness（μm）
1	**ACYS252500TD2**	25	25

3.Product properties

(1) ACYS252500TD2 Standards and test methods

No	Test Item		Unit	standard		Test method
1	Structure	PI	μm	25	50±10%	Micrometer
		Ad		25		
		Release paper		---		
2	Appearance		---	Smooth surface, no obvious wrinkle, damage, burrs, etc.		Visual Inspection
3	Peel strength		kgf/cm	≥1.0		IPC-TM650 2.4.9
4	Solder float resistance		–––	288℃/10sec		IPC-TM650 2.4.13
5	Resin flow		mm	0.05～0.15		IPC-TM650 2.3.17.1
6	Release force		g/2.5cm	3～20		OMAR specification
7	Volume resistance		Ω-cm	$\geq 10^{14}$		IPC-TM-650 2.5.17
8	Surface resistance		Ω	$\geq 10^{12}$		IPC-TM-650 2.5.17
9	Dimensional stability		%	±0.10		IPC-TM-650 2.2.4
10	UL flame resistance		---	94VTM-0		UL796F

(2) Recommended Press Process and curing condition

No.	Item		Temperature	Pressure	Time
1	Traditional press	Step.1	40℃-170℃	10 Kgf/cm²	45min
		Step.2	170℃	35 Kgf/cm²	45min
		Step.3	170℃-40℃	10 Kgf/cm²	30min
2	Fast press	Fast press	180℃	100-120 Kgf/cm²	prepress:10s, pressing:60-100s
		curing	170℃	/	60-90min

Note：This recommendation conditions are for reference only. Customers should evaluate according to the actual use of the machine and requirements of the company.

(3) Dimension and splice

Item	Unit	Standard
Thickness (μm)	50	±3μm
Width (mm)	500	±1.0mm
Length (m)	200	-0 +1.0m
Appearance mark	Number of splices	≦2pcs/ volume
	Number of splices and defects	≦5pcs/ volume
	Appearance mark compensation	0.5m/pcs

(4) Environment-related controlled substance

The products are in accord with the requirements of RoHS.

4.Test method

(1).Peel strength--- IPC-TM-650,Method 2.4.9

1-1 Sample making：

a.Cutting a piece of 15 cm x 15 cm specimen in MD direction;

b.After tearing off the release paper/film, it is bonded with the copper foil surface of Hoz single-sided copper foil base material. Fast pressing is adopted: temperature 180℃, pressure 120kgf/cm^2, pre-pressing for 10 seconds and pressing for 90 seconds;

c.Curing 160℃/1h;

d.Cut the peeling strength specimens with a knife in width of about 5 mm.

1-2 Equipment： Universal tensile machine

1-3 The test conditions：

Speed：50mm/min

The test distance：50mm

Roller test with an angle of 90 degrees.

1-4 Peel strength calculation formula:

Peel strength(Kgf/cm) = Drawing force (Kgf) / Width (cm)

(2)Solder Float Resistance---IPC-TM-650,Method 2.4.13

2-1 Sample making:

The test sample was dried in an oven at 105℃ for 1 hour. After dehumidification, the sample was cut into three pieces of 5cm x 5cm in size.

2-2 Equipment: High-temperature tin stove

2-3 Measuring procedure:

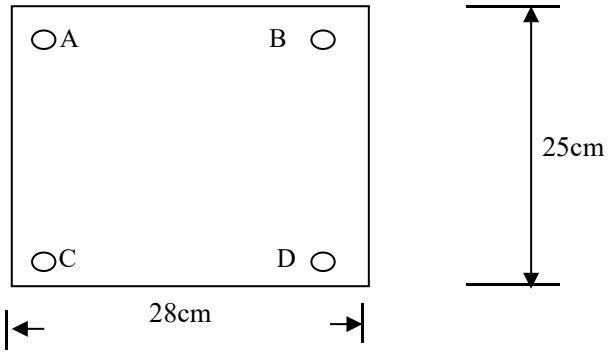
The test samples were directly immersed in the constant temperature to high-temperature tin-lead solution, and the appearance changes were observed.

2-4 Judge criteria: Surface shall not have delamination or bubbles.

(3)Dimensional stability---IPC-TM-650 Method IPC-TM-650 2.2.4.

3-1 Sample preparing

Cut the specimen into 25cm x 28m, punch four holes on it with punching machine and mark them with A.B.C.D. symbol respectively. As the following drawing shows.



3-2 Equipment:

Quadratic element, punching machine

3-3 Measuring procedure

a. Punch four holes with punching machine and mark them with A.B.C.D. symbol respectively;
b. Measure the related distance of A.B.C.D. four holes with a quadratic coordinate instrument and record it;
c. Tear off the parting paper and let stand for more than 10 minutes.
d. Measure and record the related distance of four holes in A.B.C.D. with a quadratic coordinate instrument. The following formulas are used to calculate the dimensional stability data of MD and TD, which are the results of Method B.

Dimensional stability of MD and TD was calculated by the following formulas:

$$\text{Dimension Change Percentage of TD}=\frac{【(A-B)2-(A-B)1】/(A-B)1+【(C-D)2-(C-D)1】/(C-D)1 \times 100}{2}$$

$$\text{Dimension Change Percentage of TD}=\frac{【(A-C)2-(A-C)1】/(A-C)1+【(B-D)2-(B-D)1】/(B-D)1 \times 100}{2}$$

MD: Machine Direction, ;
TD: Transverse Direction,

(4).Resin Flow---IPC-TM-650 Method 2.3.17.1

4-1 sample making:

a. Punch the coverlay with punching machine or cut the square holes with the blade;
b. Tear off the coverlay from the release paper, place the glue side flat on the substrate and fix it with stickers, and then press it with the pressing machine;
c. Pressing condition: temperature of 180 ℃, pressure of 120 kgf/cm², prepressing time of 10 SEC, pressing time of 90 SEC.

4-2 equipment:Microscope, quick press machine.

4-3 measurement procedure

The scale values of the uniform and maximum overflow parts with a diameter of 1/4 inch to 1/16 inch were observed and recorded respectively, and the average of each aperture was taken as the test value.

5.Packaging and shipping

(1) Packing specification

a. Packaging steps and schematic drawings of packaging, such as attachments I;
b. The packing box must be free from damage, wrinkles, pollution and dust;
c. Packing materials list

Name	Quantity	Name	Quantity
End cover	2	Paper box	1
Tube core	1	PE bag	1
Drying agent	1		

d. Each roll of finished product must be packed with PE plastic bag and be sealed with a bag of drying agent inside.
e. The color of label is green, and with the size of 100*80mm;
f. Stick month label on the box for first-in first-out rule;
g. The packaging may be modified according to customer`s special requirement if necessary.

(2) Shipping:

a. The products must not be upright when transporting and unloading.
b. It is necessary to use waterproof cloth when it is rainy.

(3) Storage conditions:

Storage temperature is 0-10℃, humidity is 30-70%, storage period is 4 months, calculate from the date of manufacture (vacuum packaging).

(4) internal and external labels

The inner/outer label shall be the same and shall be placed on the inner side of the pipe core and the outer box, as attached II.

6.Guaranty of un-using environment-related controlled substance

(1) we hereby undertake that all parts, raw materials, packaging materials and additives used in the production process provided to your company comply with the requirements of the eu ROHS directive and do not contain hazardous substances prohibited in the eu ROHS directive.

(2) the products of the company are sent to a third-party testing institution for testing, and the environmental management substances of the products comply with the requirements of the eu ROHS directive.

(3) the raw materials used by the company are sent to a third party for testing, and their environmental management materials meet the requirements of the eu ROHS directive.

(4) for the above commitments of the company, your company may send the products of the company to third-party testing institutions (such as SGS) and other testing institutions for testing from time to time. If the testing results do not meet the requirements of the technical agreement between the parties, our company will bear all the costs and economic losses caused to your company.

7. Instructions and other matters needing attention

(1) Instructions

a . The coverlay produced by our company should be stored at low temperature. Before using the product in customer's end, it must be put in still, until the product temperature returns to room temperature (20 ° above), to ensure the best product features. At the same time product should also avoid being placed in direct sunlight and high temperature environment;

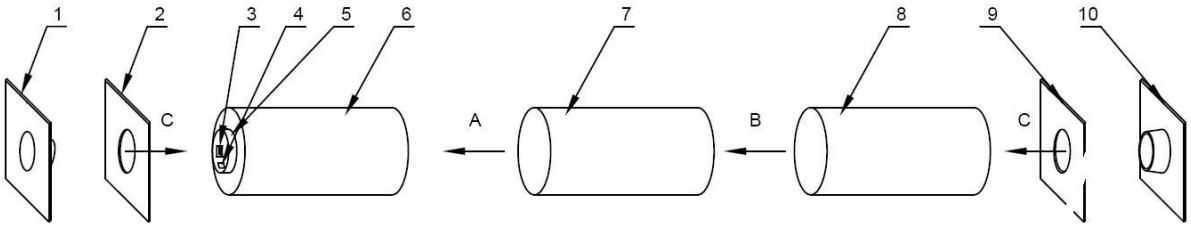
b. After material opening, if there is no temperature and humidity control in the process flow of the client side, it is recommended to store the coverlay in a sealed bag to prevent it from swelling, shrinking, warping and other phenomena in all the process flow;

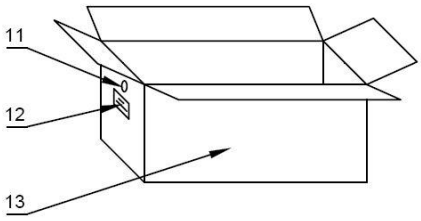
c. As the main component of PI is polyimide, the material will hydrolyze under the action of high temperature and concentrated alkali, causing the change of PI surface tension. Therefore, after the PI surface is printed characters or other carriers, the alkali washing process should be avoided; Due to the different process flow and processes used by each customer, the specific process conditions or process flow shall prevail evaluated and tested by the customer .

(2) Other matters needing attention

The validity of this specification approval is one year. If there is no amendment or change, the validity period can be automatically extended. If there is any update, this specification approval will be invalid immediately and our company will provide the latest version！

The attachment 11: Packaging schematic diagram





1. End cover
2. Pearl cotton board
3. Product label
4. Drying agent
5. Tube core
6. Products
7. Pearl cotton sheet
8. High pressure PE bag
9. Pearl cotton board
10. End cap
11. Month label
12. Product Label
13. Finished Product Packaging

Statement of steps

1. Put drying agent in the middle of the tube core and label the product.
2. Wrap the product with pearl cotton sheet in one circle and fix it ; (step A)
3. Cover the wrapped product with high pressure PE bag and vacuum seal; (step B)
4. Embed the end cover into both ends of the product; (step C)
5. Put the products fixed with end covers in the finished packing boxes with product labels and month labels. Seal the middle and transverse seams with tape and stack the finished packing boxes as required.

The attachmentII： label-example

湖 北 奥 马 电 子 科 技 有 限 公 司
Hubei OMAR Electronics Technology Co., Ltd.

94VTM-0 E467972

产品型号 PRODUCT TYPE		产品规格 PRODUCT SPEC.	
生产批号 ROLL No.		生产日期 PRODUCTION DATE	
幅宽 ROLL WIDTH		长度 ROLL LENGTH	
接布点 SPLICE No.		检验员 CHECKER	
储存条件 STORAGE CONDITION		保存期限 SHELF LIFE	
净重 NET WEIGHT		毛重 GROSS WEIGHT	

Packaged products shall be labeled with the following information:

1.Product type
2.Product spec.
3.Roll No.
4.Production Date
5.Roll width
6.Roll length
7.Splice No.
8.Checker No.
9.Storage condition
10.Shelf life
11.Net weight
12.Gross weight