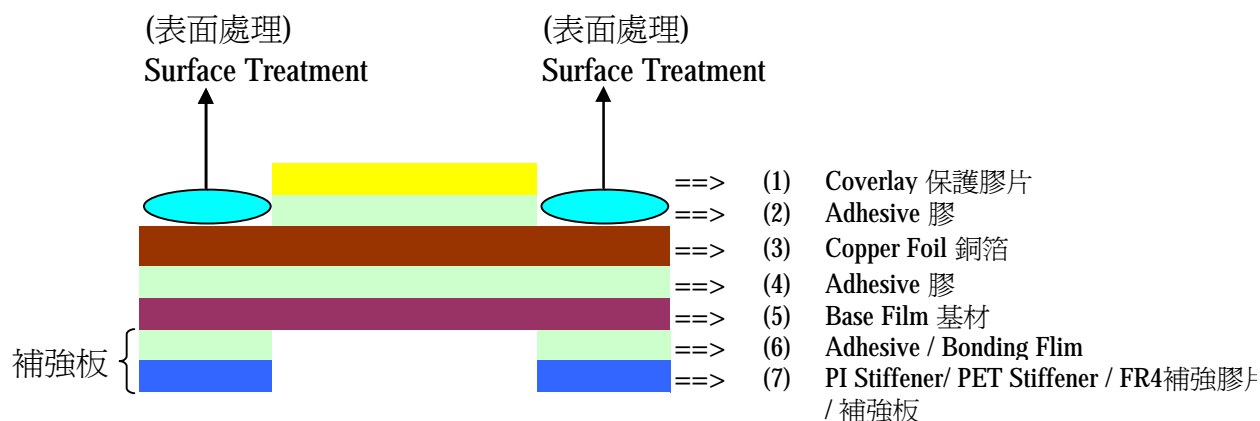


## 單面板 (Single Sided Flex)

單面板是最常見的柔性電路板，是由一層的銅箔與基材再加上保護膠片所組成，其結構可以如下圖所示： -



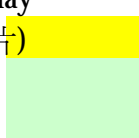
FPC can be combined by different material, the above construction layers can be combined as follow different material:-( 柔性電路板是由不同的基材所組成的，其材料的組合可以分爲以下種類)

Remarks:(1) Surface Treatment ==>  
(表面處理)



- a) Immersion Gold (Electroless Gold) 無電解金
- b) Electrolytic Gold 電解金
- c) Tin - lead Plating 錫鉛電鍍
- d) Chemical Tin 化錫
- e) Hot Air Levelling 水平噴錫
- f) OSP (Anti - Tarnish) 防鏽處理

(2) Coverlay ==>  
(保護膠片)



Material used for Coverlay can divided to Polyimide (PI) and Polyester (PET). (保護膠片的基材可以分爲PI和PET)

**PI material thickness can be concluded as below:-**

**(PI 材料的厚度可以分爲以下： -)**

- a) 1/2mil with 15um adhesive
- 1/2mil with 25um adhesive
- 1/2mil with 35um adhesive
- b) 1mil with 35um adhesive
- 1mil with 40um adhesive
- 1mil with 50um adhesive
- c) 2mil with 25um adhesive
- 2mil with 35um adhesive
- 2mil with 50um adhesive
- d) 3mil with 30um adhesive

**PET material thickness can be concluded as below:-**

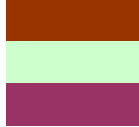
**(PET 材料的厚度可以分爲以下： -)**

- a) 1mil with 24um adhesive

(3) Copper Foil & ==>  
(銅箔)

Normal copper foil thickness can be concluded as below:-  
PI material thickness can be concluded as below:-  
(PI 材料的厚度可以分爲以下: -)

(5) Base Film  
(基板)



- a) 1/2oz RA, 1/2mil PI CCL
- b) 1/2oz RA, 1mil PI CCL
- c) 1/2oz RA, 2mil PI CCL
- d) 1oz RA, 1mil PI CCL
- e) 1oz RA, 1/2mil PI CCL
- f) 1oz RA, 2mil PI CCL
- h) 2oz RA, 1/2mil PI CCL
- i) 2oz RA, 1mil PI CCL
- j) 2oz RA, 2mil PI CCL
- k) 1/2oz ED, 1/2mil PI CCL
- l) 1/2oz ED, 1mil PI CCL
- m) 1/2oz ED, 2mil PI CCL
- n) 1oz ED, 1mil PI CCL
- o) 1oz ED, 1/2mil PI CCL
- p) 1oz ED, 2mil PI CCL
- q) 2oz ED, 1/2mil PI CCL
- r) 2oz ED, 1mil PI CCL
- s) 2oz ED, 2mil PI CCL

(7) PI & PETStiffene ==>  
(補強膠片)



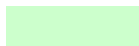
PI stiffener can be concluded as below:-  
(PI的補強膠片可以分爲以下: -)

- a) 1mil PI
- b) 2mil PI
- 3) 3mil PI
- 4) 5mil PI
- 5) 7mil PI

PET stiffener can be concluded as below:-  
(PET的補強膠片可以分爲以下: -)

- a) 2mil PET
- b) 3mil PET
- c) 4mil PET
- d) 5mil PET
- e) 7mil PET
- f) 8mil PET
- g) 10mil PET

FR4 thickness ==>  
(補強板)



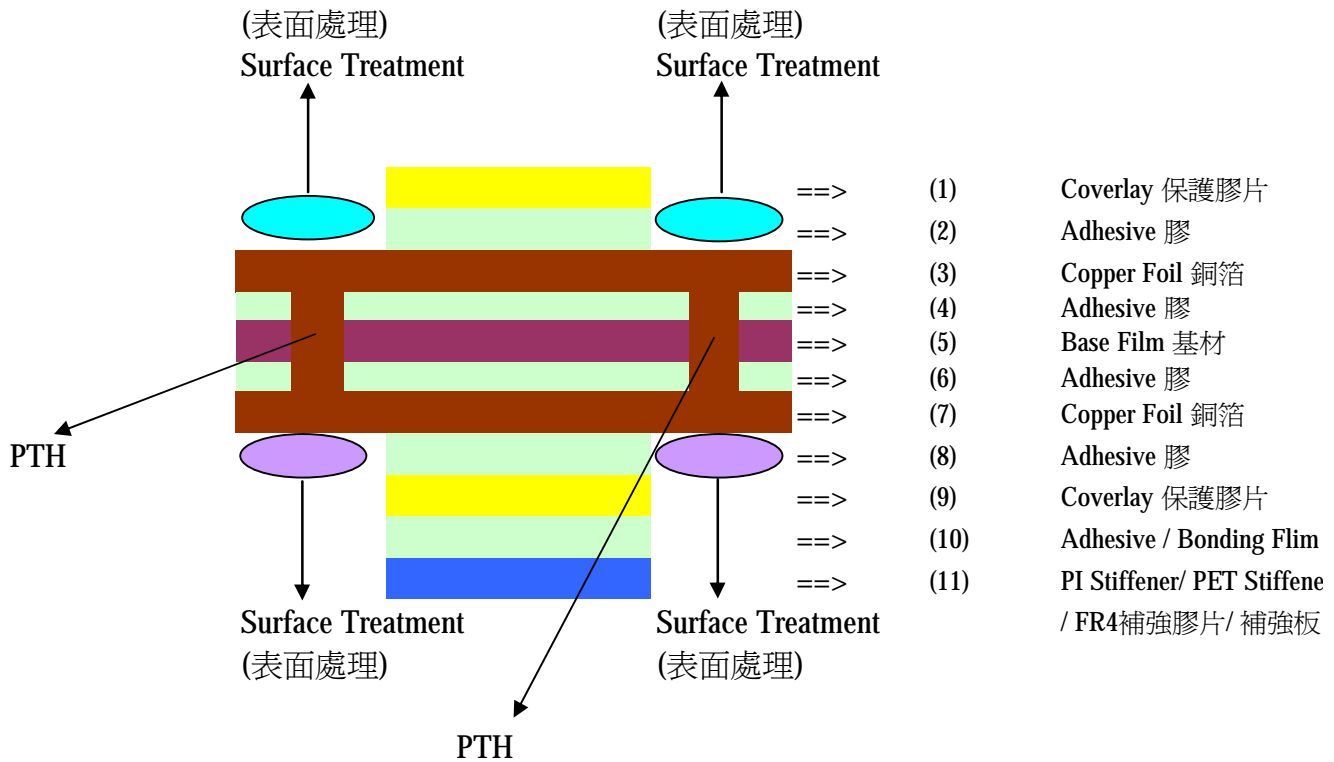
FR4 thickness can be concluded as below:-  
(FR4補強板的厚度可以分爲以下: -)



- a) 0.05mm
- b) 0.08mm
- c) 0.102mm
- d) 0.2mm
- e) 0.203mm
- f) 0.3mm
- g) 0.4mm
- h) 0.5mm
- i) 0.6mm
- j) 0.8mm
- k) 0.11mm
- l) 0.13mm
- m) 0.15mm
- n) 0.16mm
- o) 0.18mm
- p) 1.0mm
- q) 1.2mm
- r) 1.5mm
- s) 1.6mm

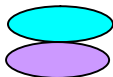
# 雙面板 (Double Sided Flex)

雙面板是含有或不含鍍通孔的雙層電層，具有更高的集成度，有利于控制電阻。其是由兩層的銅箔與基材組成，上下都有保護膠片，結構如下圖所示： -



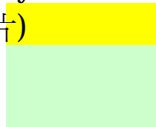
FPC can be combined by different material, the above construction layers can be combined as follow different material:- ( 柔性電路板是由不同的基材所組成的，其材料的組合可以分爲以下種類)

Remarks:(1) Surface Treatment==>  
(表面處理)



- a) Immersion Gold (Electroless Gold) 無電解金
- b) Electrolytic Gold 電解金
- c) Tin - lead Plating 錫鉛電鍍
- d) Chemical Tin 化錫
- e) Hot Air Levelling 水平噴錫
- f) OSP (Anti - Tarnish) 防鏽處理

(2) Coverlay ==>  
(保護膠片)



Material used for Coverlay can divided to Polyimide (PI) and Polyester (PET). (保護膠片的基材可以分爲PI和PET)

PI material thickness can be concluded as below:-  
(PI 材料的厚度可以分爲以下： -)

- a) 1/2mil with 15um adhesive
- 1/2mil with 25um adhesive
- 1/2mil with 35um adhesive
- b) 1mil with 35um adhesive
- 1mil with 40um adhesive
- 1mil with 50um adhesive
- c) 2mil with 25um adhesive
- 2mil with 35um adhesive
- 2mil with 50um adhesive
- d) 3mil with 30um adhesive

PET material thickness can be concluded as below:-

(PET 材料的厚度可以分爲以下: -)

a) 1mil with 24um adhesive

(3) Copper Foil & (銅箔) ==>

Normal copper foil thickness can be concluded as below:-

PI material thickness can be concluded as below:-

(PI 材料的厚度可以分爲以下: -)

(4) Base Film

(基材)



a) 1/2oz RA, 1/2mil PI, 1/2oz CCL

b) 1/2oz RA, 1mil PI, 1/2oz CCL

c) 1/2oz RA, 2mil PI, 1/2oz CCL

d) 1oz RA, 1mil PI, 1oz CCL

e) 1oz RA, 1/2mil PI, 1oz CCL

f) 1oz RA, 2mil PI, 1oz CCL

g) 1/2oz ED, 1/2mil PI, 1/2oz CCL

h) 1/2oz ED, 1mil PI, 1/2oz CCL

i) 1/2oz ED, 2mil PI, 1/2oz CCL

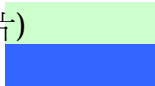
j) 1oz ED, 1mil PI, 1oz CCL

k) 1oz ED, 1/2mil PI, 1oz CCL

l) 1oz ED, 2mil PI, 1oz CCL

(5) PI & PETStiffener ==>

(補強膠片)



PI stiffener can be concluded as below:-

(PI的補強膠片可以分爲以下: -)

a) 1mil PI

b) 2mil PI

3) 3mil PI

4) 5mil PI

5) 7mil PI

PET stiffener can be concluded as below:-

(PET的補強膠片可以分爲以下: -)

a) 2mil PET

b) 3mil PET

c) 4mil PET

d) 5mil PET

e) 7mil PET

f) 8mil PET

g) 10mil PET

FR4 thickness ==>

(補強板)



FR4 thickness can be concluded as below:-

(FR4補強板的厚度可以分爲以下: -)

a) 0.05mm m) 0.15mm

b) 0.08mm n) 0.16mm

c) 0.102mm o) 0.18mm

d) 0.2mm p) 1.0mm

e) 0.203mm q) 1.2mm

f) 0.3mm r) 1.5mm

g) 0.4mm s) 1.6mm

h) 0.5mm

i) 0.6mm

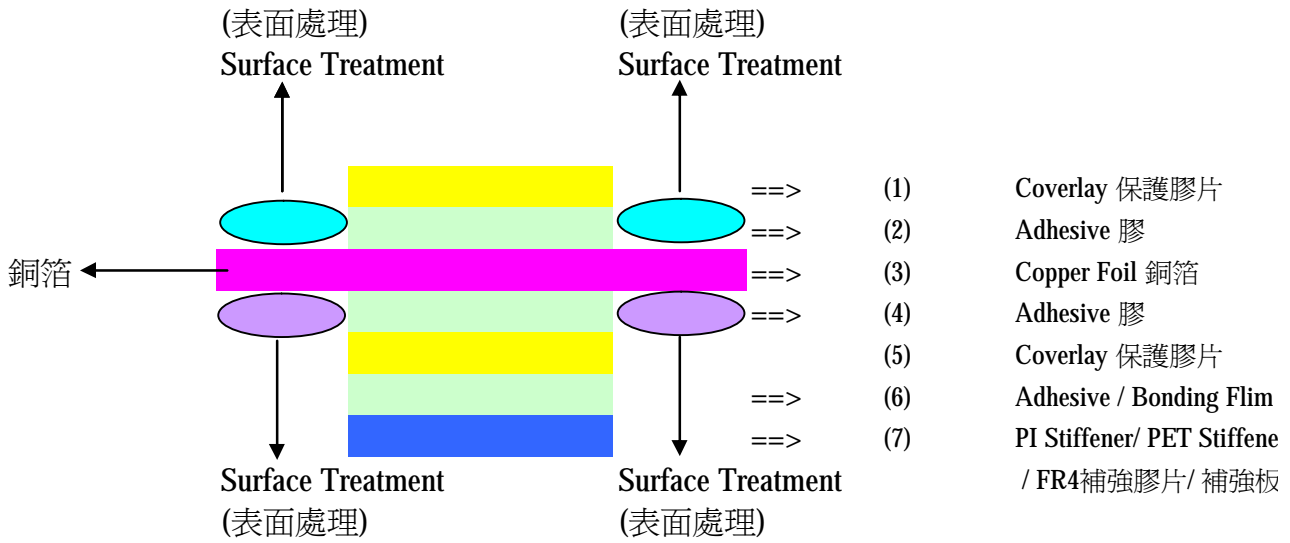
j) 0.8mm

k) 0.11mm

l) 0.13mm

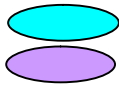
## 雙面貫連板 (Dual Access or Pre-Punch)

雙面板是由一層的銅箔構成但能雙面導銅，到底雙面板的功能。



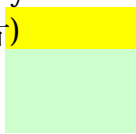
FPC can be combined by different material, the above construction layers can be combined as follow differen material:-( 柔性電路板是有不同的基材所組成的，其結構層可以分爲以下)

Remarks:(1) Surface Treatment ==>  
(表面處理)



- a) Immersion Gold (Electroless Gold) 無電解金
- b) Electrolytic Gold 電解金
- c) Tin - lead Plating 錫鉛電鍍
- d) Chemical Tin 化錫
- e) Hot Air Levelling 水平噴錫
- f) OSP (Anti - Tarnish) 防鏽處理

(2) Coverlay ==>  
(保護膠片)



Material used for Coverlay can divided to Polyimide (PI) and Polyester (PET). (保護膠片的基材可以分爲PI和PET)

PI material thickness can be concluded as below:-

(PI 材料的厚度可以分爲以下: -)

- a) 1/2mil with 15um adhesive  
1/2mil with 25um adhesive  
1/2mil with 35um adhesive
- b) 1mil with 35um adhesive  
1mil with 40um adhesive  
1mil with 50um adhesive
- c) 2mil with 25um adhesive  
2mil with 35um adhesive  
2mil with 50um adhesive
- d) 3mil with 30um adhesive

PET material thickness can be concluded as below:-

(PET 材料的厚度可以分爲以下: -)

- a) 1mil with 24um adhesive

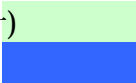
(3) Copper Foil ==>  
(銅箔) 

Copper foil for dual access do not include the base film.

(雙面貫連板所採用的銅箔是沒有基材的)

- a) 1/2oz RA Copper foil
- b) 1/2oz ED Copper foil
- c) 1oz RA Copper foil
- d) 1oz ED Copper foil
- e) 2oz ED Copper foil
- f) 4oz ED Copper foil
- g) 6oz ED Copper foil

(4) PI & PETStiffener ==>

(補強膠片) 

PI stiffener can be concluded as below:-


(PI的補強膠片可以分爲以下: -)

- a) 1mil PI
- b) 2mil PI
- 3) 3mil PI
- 4) 5mil PI
- 5) 7mil PI

PET stiffener can be concluded as below:-

(PET的補強膠片可以分爲以下: -)

- a) 2mil PET
- b) 3mil PET
- c) 4mil PET
- d) 5mil PET
- e) 7mil PET
- f) 8mil PET
- g) 10mil PET

FR4 thickness ==>  
(補強板) 

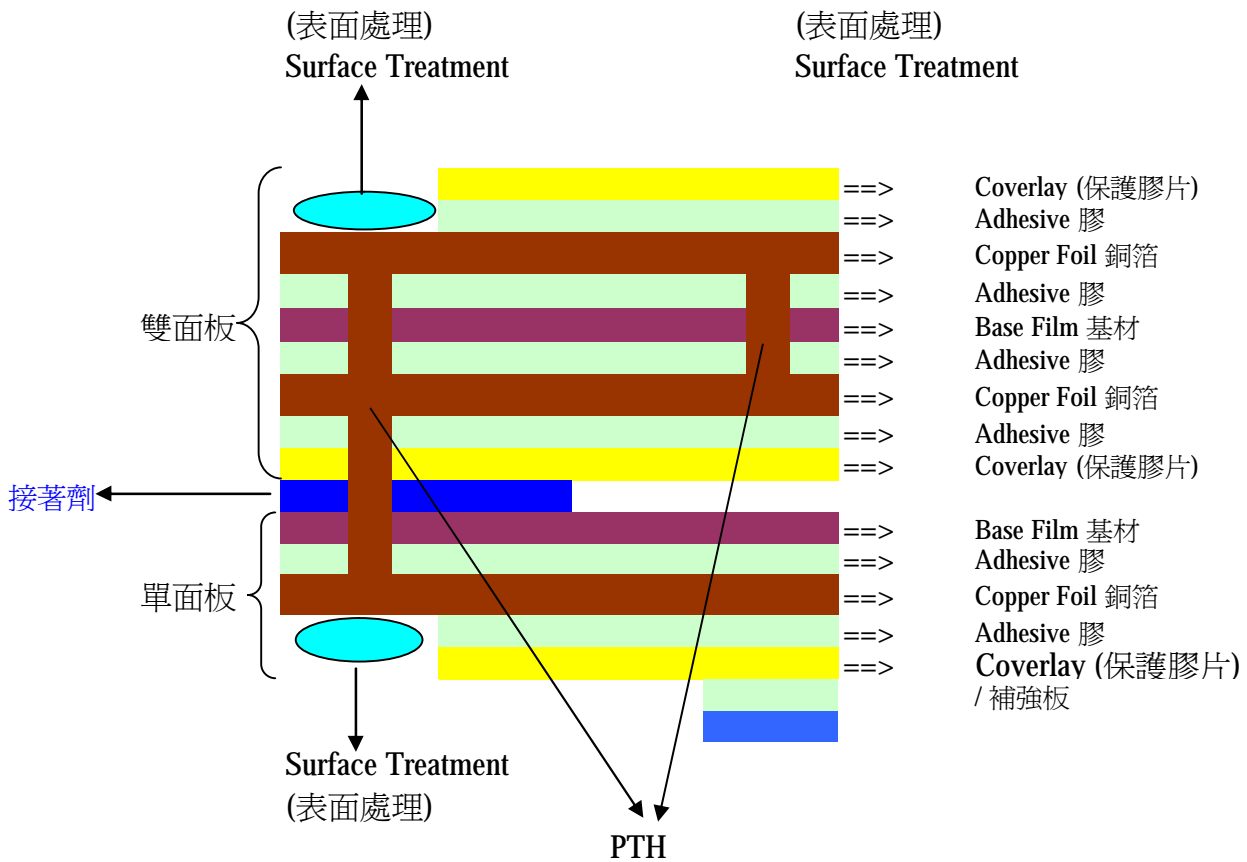
FR4 thickness can be concluded as below:-

(FR4補強板的厚度可以分爲以下: -)

- a) 0.05mm
- b) 0.08mm
- c) 0.102mm
- d) 0.2mm
- e) 0.203mm
- f) 0.3mm
- g) 0.4mm
- h) 0.5mm
- i) 0.6mm
- j) 0.8mm
- k) 0.11mm
- l) 0.13mm

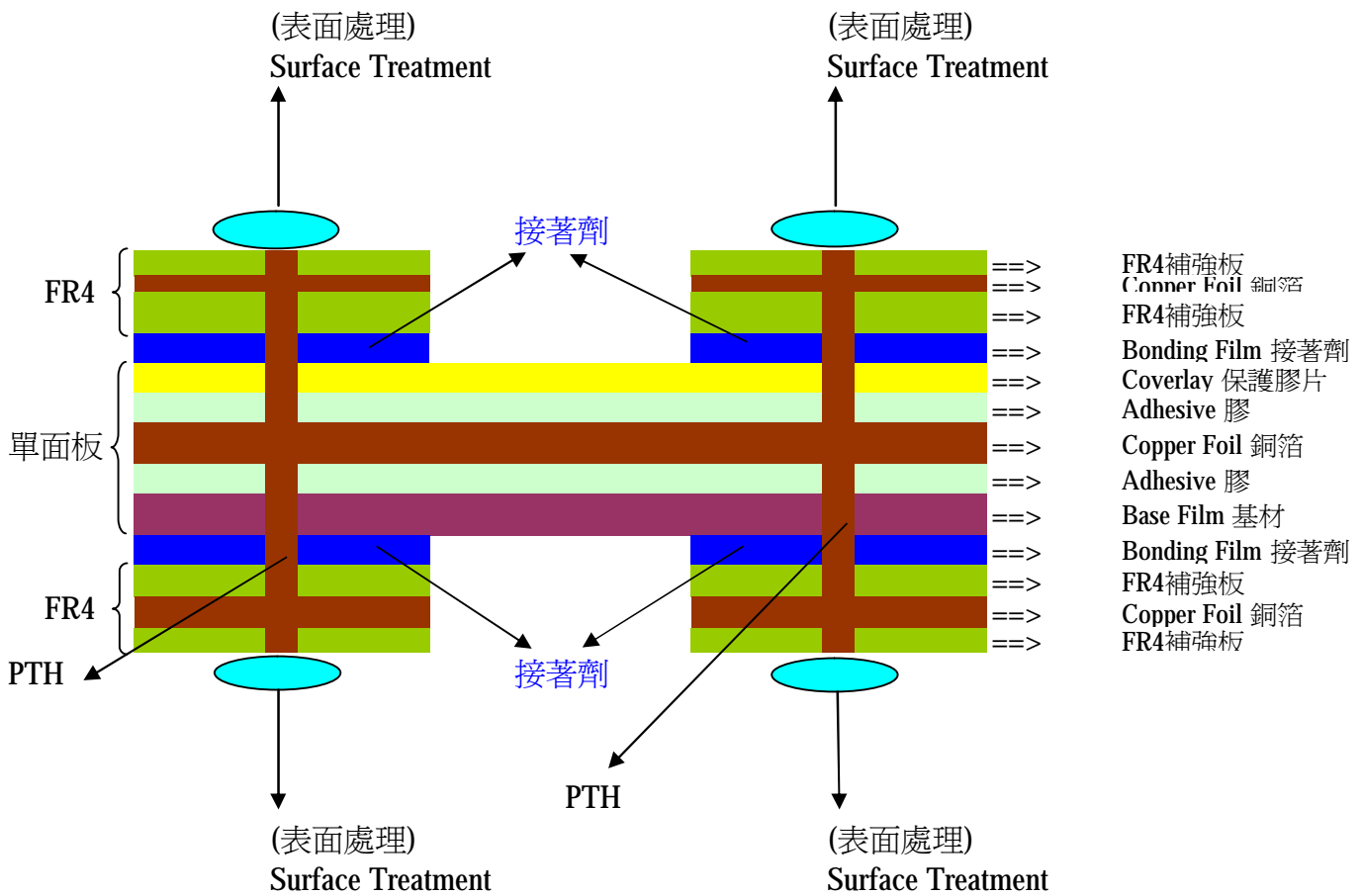
## 多層板 (Multi-layer Flex)

由三層或多層通電層所組成的，有鍍通孔導電，便于解決複雜的問題，有利于控制電阻。



如圖所示是三層板，是由雙面板和單面板所組成的，其材料與普通的雙面板和單面板一樣，在壓合雙面板和單面板採用了一層的接著劑。





軟硬結合板是有軟性電路板和硬板經熱壓封裝在一起，是通過PTH的工序來完成。其軟板的部份是與單面板一樣的材料構造，而硬板的部份是採用了FR4同時在FR4裡夾著銅箔。

FR4的厚度可以分爲很多不同的厚度(請參閱附件)，同時FR4的銅箔厚度也可以分爲1OZ，1/2OZ等等的(請參閱附件)。