

# Performance of ULF coated drill



ULFコートドリル加工事例

## FX-series (for FPC) $\phi 0.1$ & $\phi 0.12$ drilling performance

Work material: PKFW 0512RAH 2 layer (rolled copper foil:  $12 \mu\text{m}$ , PI:  $14 \mu\text{m}$ )

$\phi 0.1$  ... t0.038(Double sided 12/12  $\mu\text{mCu}$ ) **18 panels / stack**

$\phi 0.12$  ... t0.038(Double sided 12/12  $\mu\text{mCu}$ ) **20 panels / stack**

Entry sheet: SA70/25

N:200,000  $\text{min}^{-1}$  F:2.0 m/min f:10  $\mu\text{m/rev}$

Set life:10,000 hits

Work material : Arisawa Manufacturing Co., Ltd..  
Entry sheet : SHOWA DENKO PACKAGING CO.



# ULF for Flexible PCB $\phi 0.1$ & $\phi 0.12$

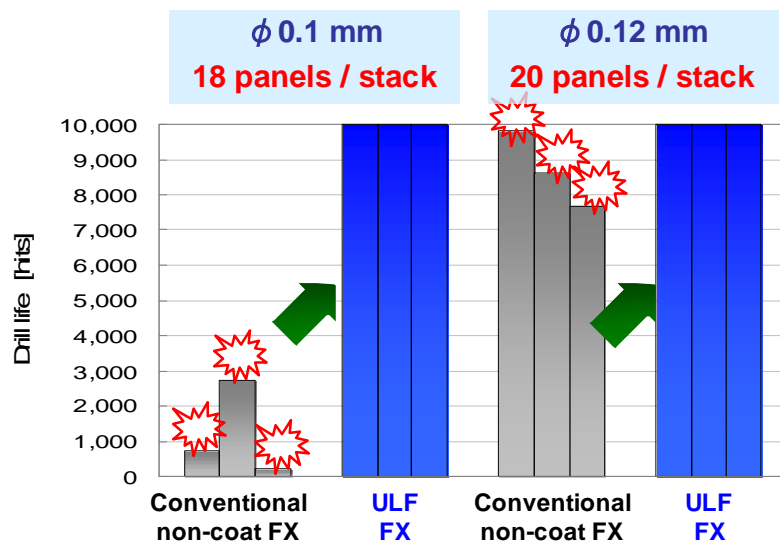
## ULFコートドリル フレキシブル基板 $\phi 0.1$ & $\phi 0.12$ mm 加工事例

### Drilling condition [加工条件]

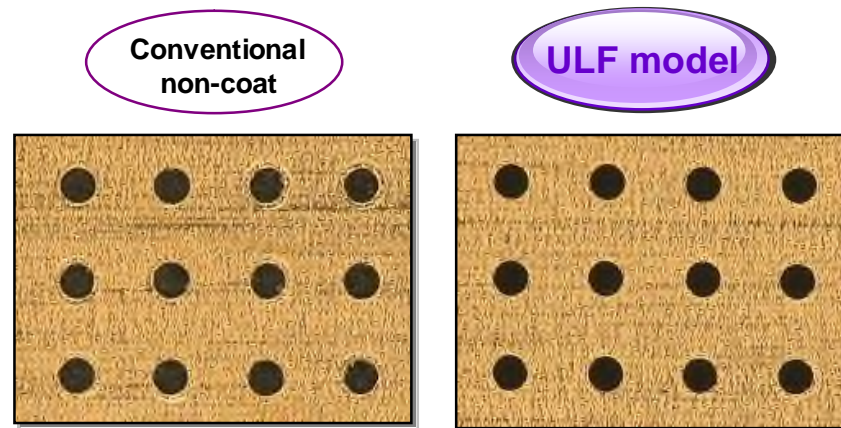
Work material : 有沢製作所製 PKFW 0512RAH t0.038 2層 (圧延銅箔 :  $12\mu\text{m}$ 、PI :  $14\mu\text{m}$ )  
 N :  $200,000\text{ min}^{-1}$  F :  $2.0\text{ m/min}$  f :  $10\mu\text{ m/rev}$  Entry sheet : SA70/25  
 Set life : 10,000 hits

### Performance of ULF coated drill [ULFコートドリルの性能]

#### ■ Drill breakage resistance [折損寿命]



#### ■ Burr [バリ]



$\phi 0.1\text{ mm}$   
 Entry side of top panel [最上部基板進入側]

**Higher stack up is possible, which conventional FX could not achieve.**

従来のFXドリルでは困難だった重ねUP加工が可能

**ULF improves hole deformation.**

穴周囲変形を改善

Work material : Arisawa Manufacturing Co., Ltd..  
 Entry sheet : SHOWA DENKO PACKAGING CO.





# ULF for Flexible PCB $\phi 0.1$ & $\phi 0.12$

ULFコートドリル フレキシブル基板  $\phi 0.1$  &  $\phi 0.12$ mm 加工事例

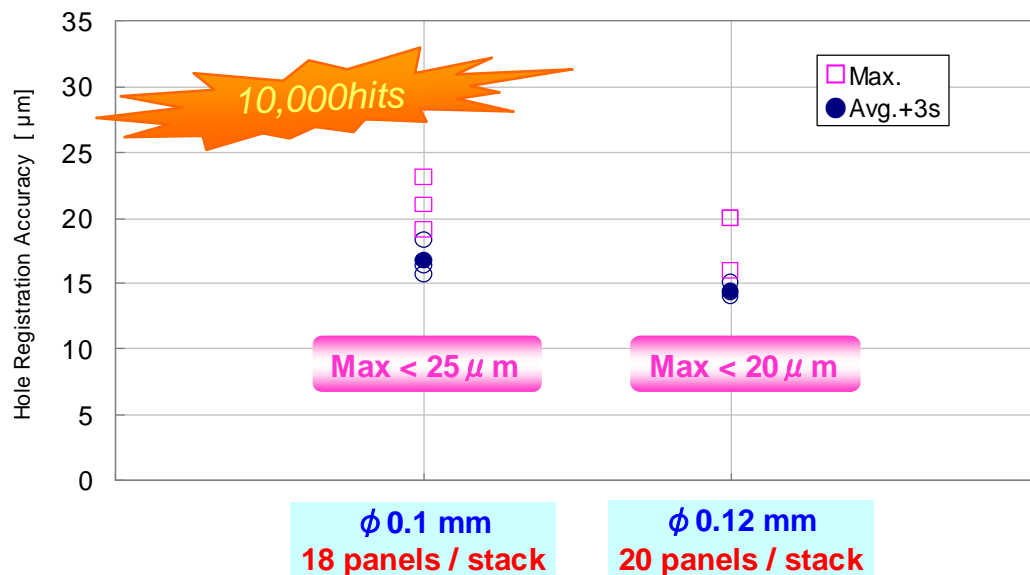


## Drilling condition [加工条件]

Work material : 有沢製作所製 PKFW 0512RAH t0.038 2層 (圧延銅箔 :  $12\mu\text{m}$ 、PI :  $14\mu\text{m}$ )  
N :  $200,000\text{ min}^{-1}$  F :  $2.0\text{ m/min}$  f :  $10\mu\text{ m/rev}$  Entry sheet : SA70/25  
Set life : 10,000 hits

## Performance of ULF coated drill [ULFコートドリルの性能]

### Hole registration accuracy [穴位置精度]

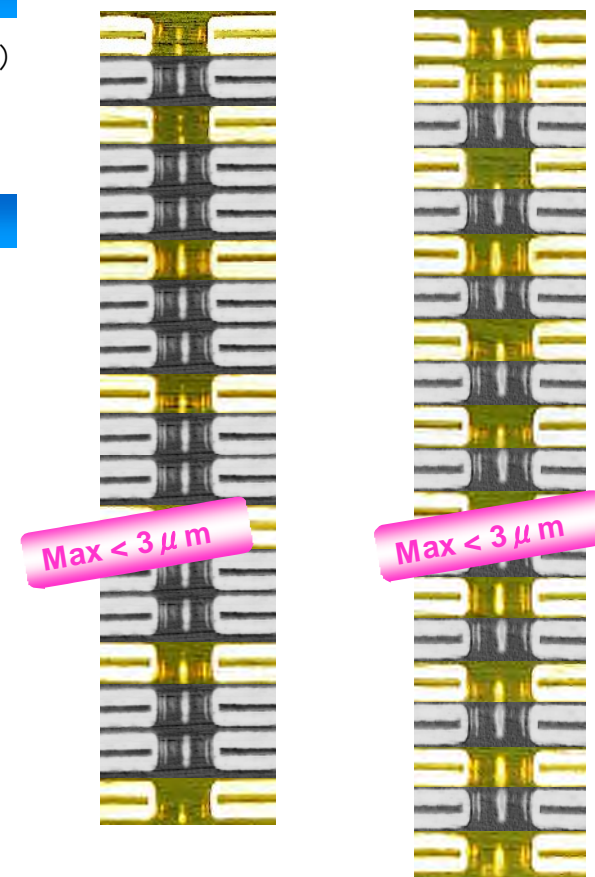


**Excellent hole registration accuracy.**

良好な穴位置精度を実現

Work material : Arisawa Manufacturing Co., Ltd.  
Entry sheet : SHOWA DENKO PACKAGING CO.

### Hole wall roughness [内壁粗さ]



$\phi 0.1\text{ mm}$   
18 panels / stack

$\phi 0.12\text{ mm}$   
20 panels / stack