

## ORDYL FP 400 DRY FILM

PRODUCT DATA SHEET  
Edition 05 – 28 August 2019

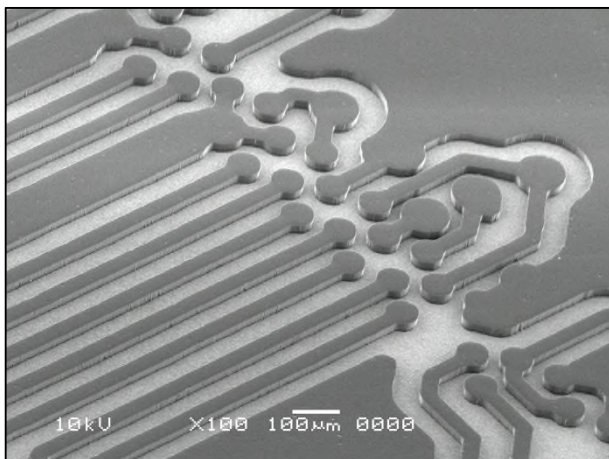
### PRODUCT DESCRIPTION

Ordyl FP 400 is a negative, aqueous processable dry film designed to be exposed with LDI and standard UV lamps.

FP 400 is a special Dry Film specifically designed to obtain Ultra-Fine Line pattern.

FP 400 is developable and strippable in mildly alkaline solutions and offers superior performances and resistance to leaching in all the most commonly used plating bath in PCB manufacturing. This type of dry film ensure good tenting performances even on large tooling holes; this can be achieved starting from 40  $\mu\text{m}$  thickness.

#### FP 425



#### Main Features:

- Excellent resolution up to 1:2 (i.e. with 40  $\mu\text{m}$  thickness it can be obtained 20  $\mu\text{m}$  of resolution)

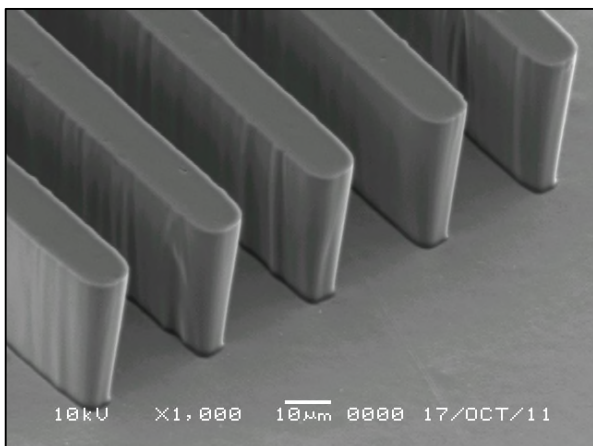
#### Typical Application:

- Acid etching
- Tenting process
- Copper, tin, tin/lead plating

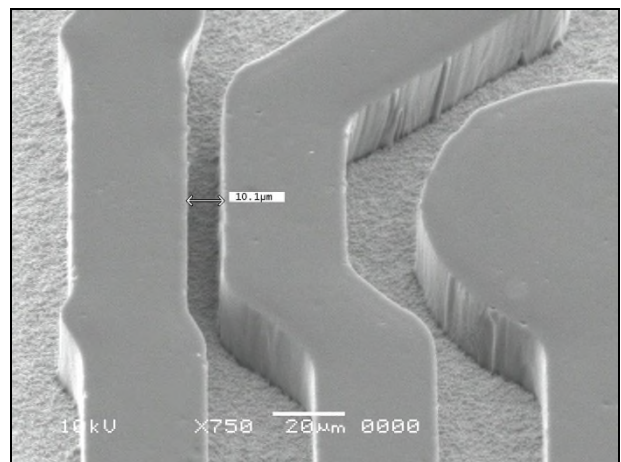
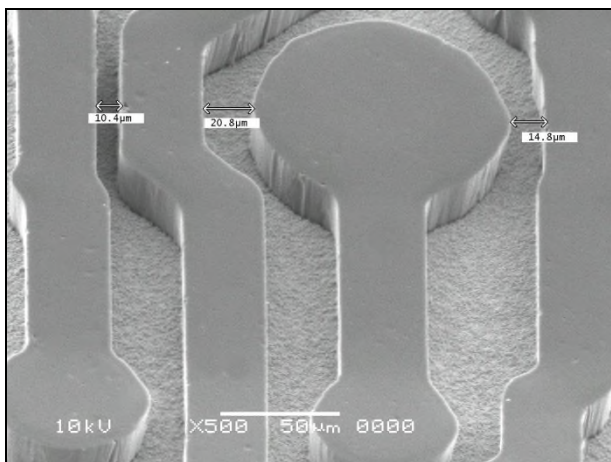
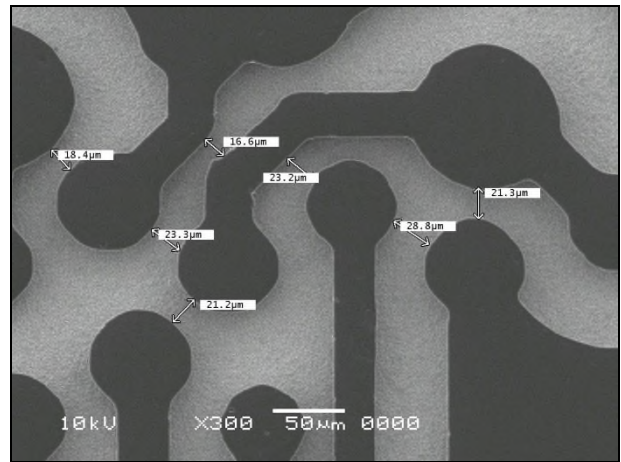
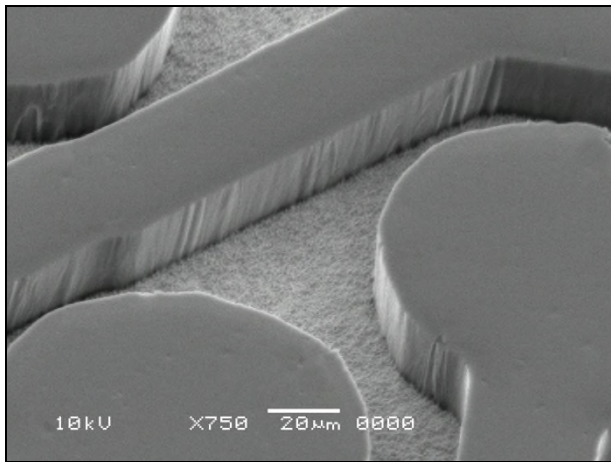
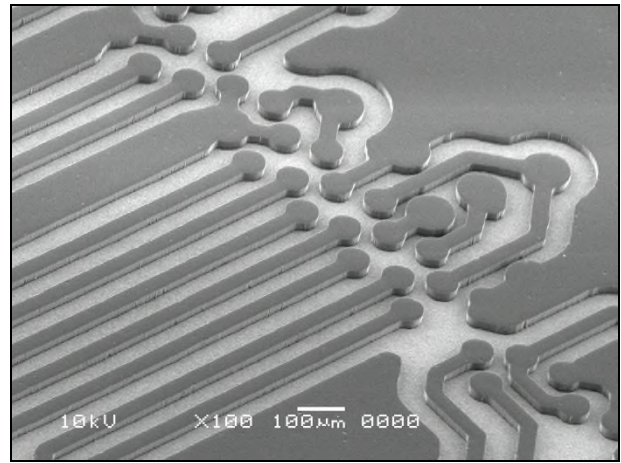
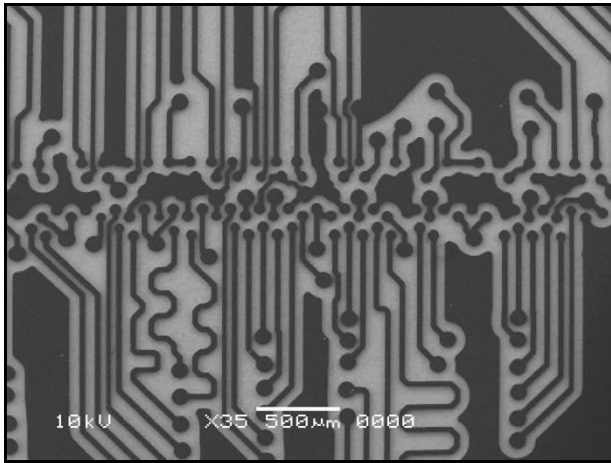
#### Available Thickness:

- 15  $\mu\text{m}$  (0.6 mils), 25  $\mu\text{m}$  (1.0 mils), 40  $\mu\text{m}$  (1.6 mils) and 50  $\mu\text{m}$  (2 mils) for Ultra Fine Line

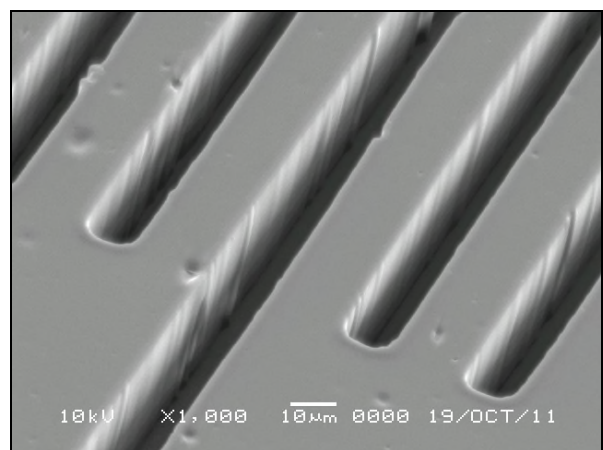
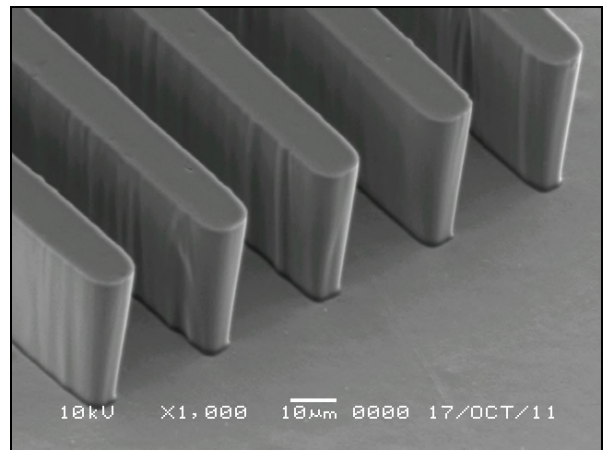
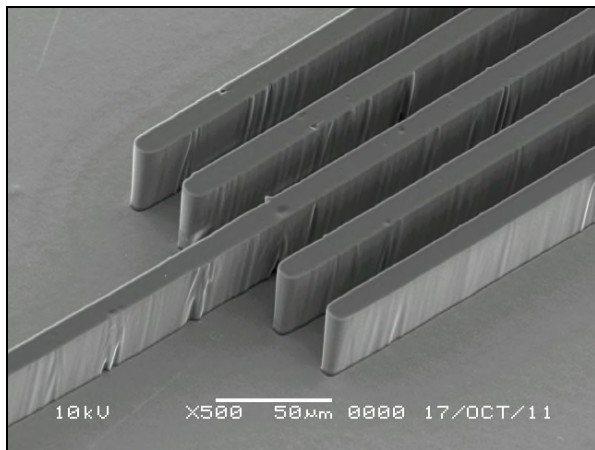
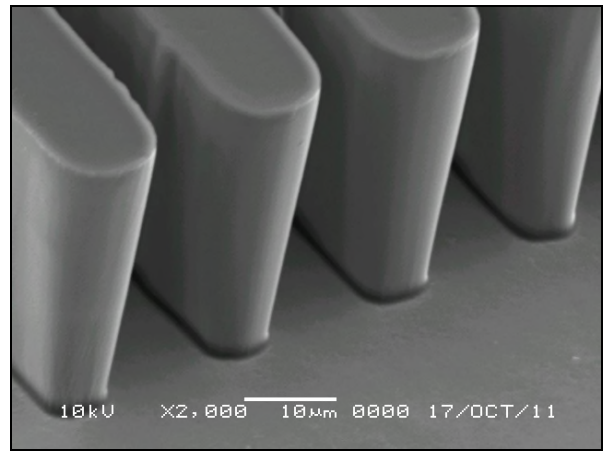
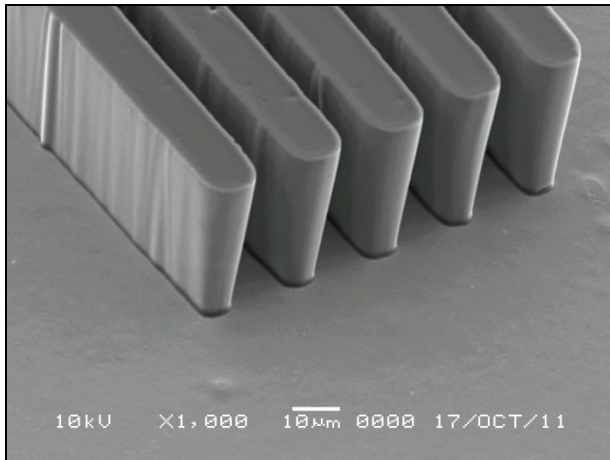
#### FP 440



# FP 425



# FP 440



## PROCESS INFORMATION

### Surface preparation

FP 400 guarantee good adhesion on the following surface:

- Vendor copper
- Electroless copper and panel plated copper, both unscrubbed and treated with pumice and brush
- Chemical microetched surface

We recommend good surface cleaning in order to obtain optimal performance.

### Lamination

Panels must be thoroughly dry prior to lamination.

	MANUAL LAMINATOR	AUTOMATIC LAMINATOR
<b>Pre-heat</b>	(OPTIONAL)	(OPTIONAL)
<b>Hot roll temperature</b>	105 – 125°C (221 – 257°F)	105 – 125°C (221 – 257°F)
<b>Lamination roll pressure</b>	2.5 – 3.5 bar (36 – 50 Psi)	2.5 – 6.0 bar (36 – 87 Psi)
<b>Lamination speed</b>	1 – 3m/min (3 – 10 feet/min)	1 – 3m/min (3 – 10 feet/min)
<b>Seal temperature</b>	---	40 – 80°C (104 – 176°F)
<b>Seal pressure</b>	---	3.0 – 6.0 bar (44 – 87 Psi)
<b>Seal time</b>	---	1-4 sec.

### Board exit temperature

Inner layer 50 – 70°C (122 – 158°F)

Outer layer 45 – 60°C (113 – 140°F)

### Post lamination Hold Time

We recommend a hold time of at least 20 min, or in any case the minimum hold time necessary to allow panels to cool down to room temperature.

Hold time should not be over 1 week.

## Exposure

We recommend using UV lamps or laser source with emission peak at 360 – 380 nm.

Optimal exposure at 6 Solid STEP of SST21 (7-9 Solid STEP of RST25).

We recommend to stay between 5-8 Solid STEP of SST21 (4-15 Solid STEP of RST25).

The following parameters are referred to:

6 Solid STEP of SST21

	FP 415	FP 425	FP 440	FP 450
<b>Energy (mJ/cm<sup>2</sup>)</b>	150-200	180-230	200-250	300-350
<b>Resolution</b>	< 10 µm (<0.4 mils)	15 µm (0.6 mils)	20 µm (0.8 mils)	25 µm (1.0 mils)

## Hold Time after exposure

We recommend a minimum hold time after exposure of at least 15 minutes.

## Developing

	Na <sub>2</sub> CO <sub>3</sub>		K <sub>2</sub> CO <sub>3</sub>	
	Range	Optimal	Range	Optimal
<b>Concentration</b>	0.8 – 1.2%	0.9%	0.6 – 1.0 %	0.8%
<b>Temperature</b>	26–32°C (79–90°F)	29°C (84°F)	26–30°C (79–86°F)	28°C (82°F)
<b>Spray pressure</b>	1.2–1.8 bar (17–26 Psi)	1.5 bar (22 Psi)	1.2–1.8 bar (17–26 Psi)	1.5 bar (22 Psi)
<b>Break Point</b>	50 – 65%			
<b>Rinsing water</b>	9-15°dH (150–250 ppm CaCO <sub>3</sub> )	12°dH (213 ppm CaCO <sub>3</sub> )	9-15°dH (150–250 ppm CaCO <sub>3</sub> )	12°dH (213 ppm CaCO <sub>3</sub> )

We recommend a rinse module with a length of a least 2/3 of the developing module.

The rinse water temperature should be preferably between 15-25°C (59-77°F), optimal at 20°C (68°F).

## Developing time (B.P. 60%)

	FP 415	FP 425	FP 440	FP 450
<b>Developing time</b>	20 sec.	30 sec.	45 sec.	65 sec.
<b>Dry Film load 1 g/l (0.13 oz/gal)</b>	0.06 m <sup>2</sup> /l (2.5 ft <sup>2</sup> /gal)	0.085 m <sup>2</sup> /l (3.5 ft <sup>2</sup> /gal)	0.025 m <sup>2</sup> /l (1.0 ft <sup>2</sup> /gal)	0.017 m <sup>2</sup> /l (0.7 ft <sup>2</sup> /gal)

We recommend a maximum Dry Film load of 3 g/l (0.39 oz/gal).

We recommend the use of "Ordyl Antifoam C".

## Stripping

Stripper	NaOH / KOH
Concentration	1.0 – 3.0%
Temperature	40–60°C (104–140°F)
Spray pressure	1.5 – 4.0 Bar (22–58 Psi)
Break Point	40 – 60%

We recommend the use of "Ordyl Antifoam C".

Stripping Time (*)	NaOH 3.0%, T = 50°C (122°F)
FP 415	~ 50 sec.
FP 425	~ 120 sec.
FP 440	~ 240 sec.
FP 450	~ 360 sec.

(\*) Data are obtained with laboratory dipping test.

### Proprietary strippers

Can be used in order to obtain smaller flakes, higher stripping speed, reduce copper oxidation and Tin or Tin/Lead attack.

We recommend the use of "Ordyl Stripper 5600".

**For any other technical information (storage conditions, packaging information, etc.) refer to the Ordyl Specification (Form EE.P11.CV.02-ww)**

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