

# **ETERTEC® UDH5600**

PRODUCT DATA SHEET  
EDITION 01 – OCTOBER 2023

## **PRODUCT DESCRIPTION**

Etertec® UDH5600 is a negative, aqueous processable dry film specifically designed for UV laser direct imaging (365 and 405nm) applications.

UDH5600 has been formulated for acid plating and etching applications in the production for IC substrates.

### **Main Features:**

- Excellent adhesion to the substrate
- Fast Photospeed
- High resolution capability
- Straight sidewalls
- Clean developing characteristics
- High chemical resistance to acid etchants.

### **Available Thickness:**

- 25µm (1.0 mils) and 30µm (1.2 mils) for Ultra Fine Line

## **PROCESS INFORMATION**

### **Surface preparation**

UDH5600 guarantees good adhesion on the following surface:

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

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

## LAMINATION

Panels must be thoroughly dry prior to lamination.

	<b>MANUAL LAMINATOR</b>	<b>AUTOMATIC LAMINATOR</b>
<b><i>Pre-heat</i></b>	(OPTIONAL)	(OPTIONAL)
<b><i>Hot roll temperature</i></b>	90 – 120°C (194 – 248°F)	90 – 120°C (194 – 248°F)
<b><i>Lamination roll pressure</i></b>	2.5 – 3.5 bar (36 – 50 Psi)	2.5 – 3.5 bar (36 – 50 Psi)
<b><i>Lamination speed</i></b>	1 – 3m/min (3 – 10 feet/min)	1 – 3m/min (3 – 10 feet/min)
<b><i>Exit Temperature</i></b>	40 – 65°C (105 – 149°F)	40 – 65°C (105 – 149°F)
<b><i>Seal temperature</i></b>	---	60 – 80°C (140 – 176°F)
<b><i>Seal pressure</i></b>	---	3.0 – 6.0 bar (44 – 87 Psi)
<b><i>Seal time</i></b>	---	1 – 4 sec.

### Cleanliness

The panels and the lamination rolls must be clean to prevent pinholes caused by dirt, copper and epoxy-glass slivers and resist chips.

### Post lamination Hold Time

After lamination the panels should be racked with spaces between each panel.

Panels should never be stacked on top of each other, as this will cause trapped dirt particles to imprint the resist form one board to the next; stacking also traps heat and interferes with resist performance during exposure and development.

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.

## EXPOSURE

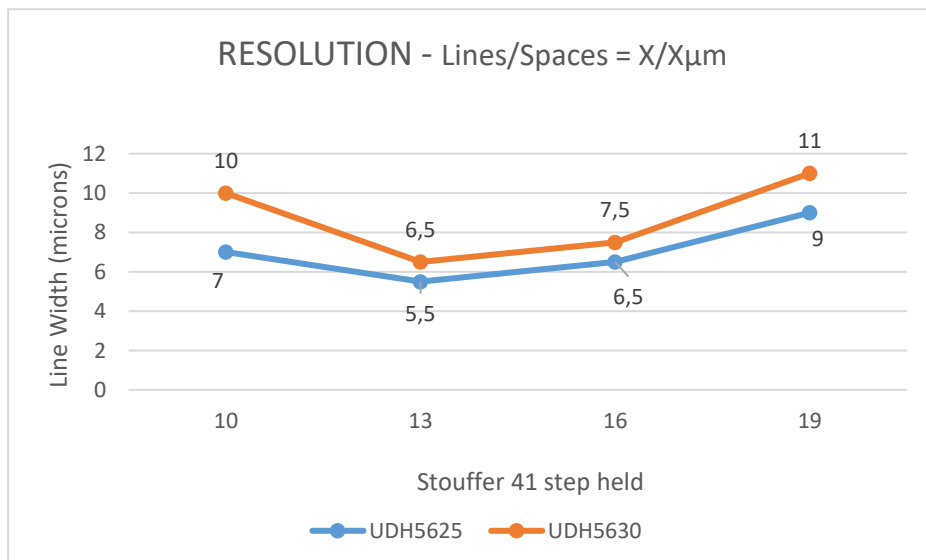
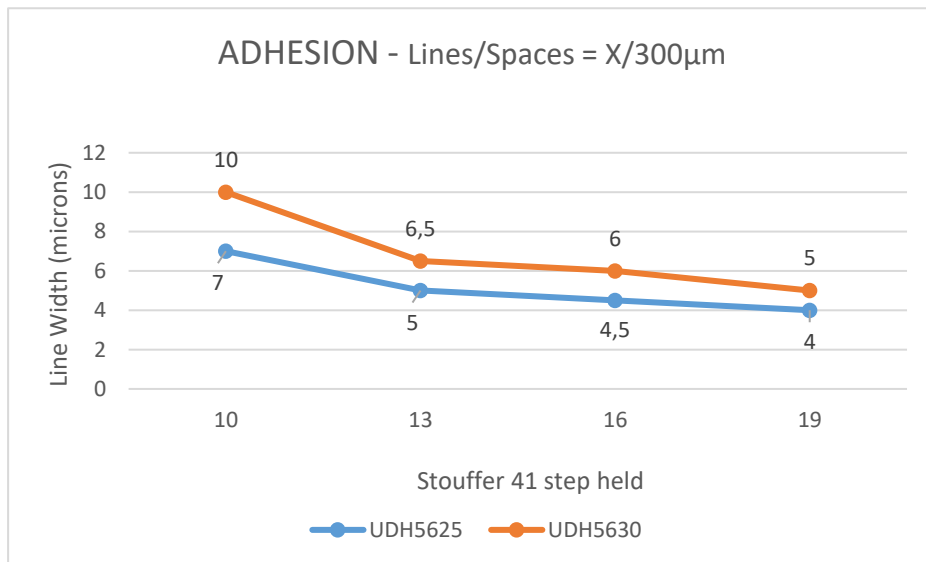
We recommend using UV lamps or laser source with emission peak at 360 – 405 nm.

The following parameters are referred to exposure at 405nm

		<b>UDH5625</b>	<b>UDH5630</b>
<b>Stouffer Step 21</b>	<b>Energy (mJ/cm<sup>2</sup>)</b>	45 – 120	45 – 120
	<b>Resist</b>	4 - 7	4 - 7
	<b>Copper</b>	5 - 8	5 - 8
<b>Stouffer Step 41</b>	<b>Resist</b>	10 - 19	10 - 19
	<b>Copper</b>	11 - 20	11 - 20

### Hold Time after exposure

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



## DEVELOPING

	<i>Na<sub>2</sub>CO<sub>3</sub></i>		<i>K<sub>2</sub>CO<sub>3</sub></i>	
	Range	Optimal	Range	Optimal
<b>Concentration</b>	0.7 – 1.0%	0.85%	0.8 – 1.2 %	1.0%
<b>Temperature</b>	25 – 34°C (77 – 93°F)	28 – 30°C (82 – 86°F)	25 – 34°C (77 – 93°F)	28 – 30°C (82 – 86°F)
<b>Spray pressure</b>	1.5 – 2.0 bar (22 – 30 Psi)	1.5 – 1.7 bar (22 – 25 Psi)	1.5 – 2.0 bar (22 – 30 Psi)	1.5 – 1.7 bar (22 – 25 Psi)
<b>Break Point</b>	50 – 70%			
<b>Rinsing water</b>	9-15°dH (150–300 ppm CaCO <sub>3</sub> )	12°dH (213 ppm CaCO <sub>3</sub> )	9-15°dH (150–300 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 (In order to have a Break Point at 60% of total develop chamber length)

	<i>UDH5625</i>	<i>UDH5630</i>
<b>Developing time</b>	33 – 43 sec.	38 – 48 sec.
<b>Dry Film load 1 g/l (0.13 oz/gal)</b>	0.04 m <sup>2</sup> /l (1.6 ft <sup>2</sup> /gal)	0.03 m <sup>2</sup> /l (1.2 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".

### Developer Maintenance

Is recommended to clean the develop machine once per week in order to remove carbonate salts, resist and antifoam residues.

## PLATING

UDH5600 dry film photoresist has excellent chemical resistance and performs well in acidic electroplating baths including copper sulphate, tin/lead, bright acid tin, nickel sulfamate and acid gold.

## STRIPPING

UDH5600 can be stripped in conventional immersions or conveyORIZED process.

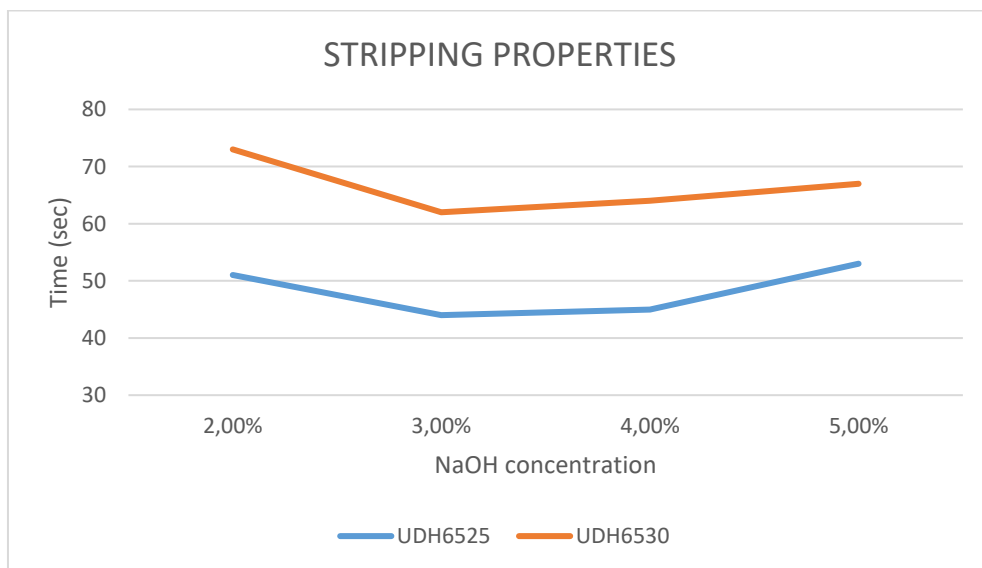
Stripper can be 2.0 – 5.0% caustic solutions like NaOH and KOH, or proprietary stripping solutions.

	<b>UDH5625</b>	<b>UDH5630</b>
<b>Time</b>	42 – 58 sec	61 – 74 sec
<b>Temperature</b>	40 – 60°C (104 – 140°F)	40 – 60°C (104 – 140°F)
<b>Pressure</b>	1.0 – 3.0 bar (15 – 45 psi)	1.0 – 3.0 bar (15 – 45 psi)
<b>Concentration</b>	2 – 5% NaOH solution	2 – 5% NaOH solution

We recommend the use of "Ordyl® Antifoam C".

### Stripping time can be influenced by:

- Concentration of caustic solution
- Stripping temperature
- The height of plating overhang
- Spray pressure
- Exposure level
- Hold time prior to strip



Data in the graph are obtained with laboratory dipping test ; Exposure at SST13/41 ; Flake size : Sheet

### 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".

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