


<b>Technical Product Information</b>			
<b>ULTRASTAR UV/LED</b>			
<b>Article-No.:</b> 025920.. 025921..		<b>Product Name:</b> ULTRASTAR UV/LED FP-8320 SILVER ULTRASTAR UV/LED FP-8321 DARK SILVER	
<b>REVISION:</b> 1	<b>EDITION:</b> JUNE 2021	<b>IDENT-NO.:</b> 00521.E	<b>PAGE</b> 1 OF 3

### Product description:

ULTRASTAR UV/LED inks are a radical curing, solvent free and stable one-component UV-flexo inks based on METALURE® Quantum pigments. Suitable for paper, board and various non absorbent substrates.

- Mirrorlike effects on PE Clear due to improved pigment orientation
- Higher metallic effect compared to ULTRASTAR UV FP-8220

For printing on absorbent substrates like paper and board we recommend to print ULTRASTAR UV/LED on top of a primer (e.g. Actega Terraflex Primer G 8/603VK or G 8/105 VK) in order to improve pigment orientation and thus the metallic effect.

The radiation curing (UV/LED light) inks ULTRASTAR UV/LED may release odour-generating by-products during the drying process and is neither low-migration nor low-odour. Therefore it might contain unevaluated substances with the potential to migrate. Further essential measures for food packaging inks like specific raw material selection, analytic control of raw materials and final products on composition and impurities, GMP production, cannot be guaranteed for ULTRASTAR UV/LED. Due to our production processes for these products, we cannot guarantee necessary measures for FCM (Food Contact Materials), such as special raw material selection, control of raw materials and end products regarding composition and impurities or production according to GMP.

A SoC is therefore not available for these products.

When using these products in indirect food contact, the suitability for this application has to be tested before commercial use by the user through suitable analyses.

### What is LED curing

UV-curing methods can be differentiated by the light source which is used. Mercury vapor lamps are the industry standard for curing products with ultraviolet light. These lamps emit a spectral output in the UV region of the light spectrum. The light intensity occurs in the 240 nm-270 nm and 350-380-nm. This intense spectrum of light is what causes the rapid curing of the standard UV inks

In the last few years an emerging type of UV curing technology called UV LED curing has entered the marketplace. This technology is growing rapidly in popularity as it is less energy consuming than mercury vapor lamps. LEDs used to be much more expensive but last up to 10 times longer, and can be cycled on and off frequently as they require no startup or cool down period.

As LED lamps are only emitting one decent wavelength, inks with a curing especially optimized for this curing method are necessary.

### Application:

ULTRASTAR UV/LED inks are suitable for flexo print on paper, board and different film substrates, for labels, flexible packaging and carton folders. For narrow-web, as well as wide-web applications.

ULTRASTAR UV/LED is based on leafing pigments and provides high brilliance. In practice, finishing, e.g. in-line or off-line over varnishing, hot foil stamping, thermal transfer printing is possible. Individual test are necessary prior to commercial use.

For printing on thermographic papers use an overprint varnish or the thermo-head could be damaged, when used on pure metallic ink film.

As with all metallic inks the substrate has an influence on the final result. Very absorbent or uneven substrates often cause poor pigment orientation resulting in inferior brilliance. This is true not only for optical properties as brilliance and hiding power, but also for printing properties such as adhesion and curing. In some cases, the use of primers to improve the substrate surface is advantageous.

ULTRASTAR UV/LED-inks are suitable to be overprinted in-line. It is recommended to cure before varnish is applied, to preserve the metallic effect. Over lacquering reduces the metallic effect. This influence as well as the cohesion should be tested prior to any commercial use.

### Product properties:

#### Curing speed:

On many substrates the ULTRASTAR UV/LED shows, using a UV-lamp capacity of 140 Watt/cm and printing speeds of 100 m/min, a fast and good curing (MEK-test). For LED curing we recommend a wavelength of 385 and/or 395 nm. Strong absorbent and transparent substrates can have a negative impact to the curing properties of the ink.

#### Rub resistance:

Completely cured both inks (FP-8320/8321) provides good rub resistance on almost all substrates. To meet high demands on rub resistance an overprint varnish should be applied, ideally in-line with additional curing. However, any finishing reduces the metallic effect.


#### Adhesion:

ULTRASTAR UV/LED shows good adhesion to coated label papers, PE and OPP films. Corona treatment is recommended, also by using coated papers. The maximum adhesion takes effects after around 24h.

#### Additional product properties:

ULTRASTAR UV/LED	FP-8320 and FP-8321
<b>Pigment content</b>	appr. 3,9 %
<b>Pigment size (D<sub>50</sub>)</b>	appr. 7 µm
<b>Solvent content</b>	0 %
<b>VOC</b>	0 %

*For specifications of our products, please refer to the technical data sheet. This is not valid for experimental products.*

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### Recommended printing parameters:

#### Anilox configuration:

The metallic effect depends on the ink lay down;

The following parameters have shown to be useful:

	L/cm	L/inch	Volume cm <sup>3</sup> /m <sup>2</sup>	Volume BCM/in <sup>2</sup>
<b>Full areas &amp; coarse lines</b>	80-120	200-300	11-14	7.0-9.0
<b>Fine lines</b>	140-170	360-440	7-10	4.5-6.5

#### Printing speed:

At 140 Watt/cm UV-lamp capacity and 12 cm<sup>3</sup>/m<sup>2</sup> Anilox volume a printing speed of 100 m/min can be achieved. Dependent on substrate, the printing speed varies.

**Printing viscosity:** FP-8320 and FP-8321 are supplied with print viscosity.

#### Dilution:

The ink is already adjusted to printing viscosity. It's not recommended to add reactive diluents as a negative impact to optical effect, curing speed and stability of the ink could occur.

If necessary to adjust the viscosity, this can be achieved by a low addition of reactive diluents like HDDA, TPGDA or TMP(EO)TA can be added at press side.

If unavailable, up to 5% of Methoxypropanol or N-Methylpyrrolidon can be added.

#### Cleaning recommendations:

ULTRASTAR UV/LED inks can be cleaned by using conventional UV-cleaning agents. Also with esters or ester/alcohol mixtures the uncured inks can be removed easily from the cylinders.

Please refer to the safety data sheet and the safety guidelines given there.

#### Handling:

ULTRASTAR UV/LED inks are stable, brilliant one-component inks. that can be printed without modification. Blending of with other components should only be done on ECKART's recommendation in order to avoid a possible decrease in quality.

Metallic inks tend to settle during storage because of the high specific gravity of the pigment. This is normal and not due to a lack of quality. The inks can be easily stirred up and homogenised again. This should be done before viscosity is checked. No pigment settling should be left on the bottom of the container.

When handling UV/LED inks, please refer to the safety data sheet and the safety guidelines given there.

#### Storage and transportation:

ULTRASTAR UV/LED inks should be stored at temperatures below 25°C. Direct sunlight should also be avoided.


High temperatures can lead to gelling. Low temperatures can result in the separation of low soluble binder components.

Opened containers should never be handled in the direct sunlight, since this result is in a preliminary polymerisation.

**Shelf life:** 6 months

Important: ECKART strongly recommends disposing of used ink after running on press, as the shelf-life of this material can be greatly reduced due to various factors such as light, heat, contaminants etc.

ECKART cannot guarantee the shelf life of printing ink which has been previously used or modified, nor for ink which has been stored outwith the conditions above.

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