


<b>Technical Product Information</b>			
<b>ULTRASTAR UV/LED FPG series</b>			
<b>Article-No.:</b> 028423... 028764...		<b>Product Name:</b> ULTRASTAR UV/LED FPG 78321 Silver ULTRASTAR UV/LED FPG 78322 Silver	
<b>REVISION:</b> 1	<b>EDITION:</b> JULY 2025	<b>IDENT-NO.:</b> 00573.E	<b>PAGE</b> 1 OF 2

### Product description:

ULTRASTAR UV/LED FPG inks are TMPTA free radical curing, solvent free and stable one-component UV/LED-Flexo inks suitable for paper, board and various non absorbent substrates. The ink is based on VMP (METALURE®) pigments.

ULTRASTAR UV/LED FPG 78321 is formulated with high viscosity for dual cure Flexo applications and stable printing processes.

ULTRASTAR UV/LED FPG 78322 is formulated with low viscosity for dual cure Tower Coater applications and high printing speed.

These inks are based on our darkest Metalure type for energy curing applications. Due to its intense chrome effect, it is ideal for replacing metalized board.

The radiation curing (UV/LED light) ink is formulated to meet the requirements for packaging of luxury goods:

- Ingredients are either low migration or meet the specific migration limits for evaluated substances under selected test conditions.
- Raw materials are selected with preference for high purity materials.
- White spirit and mineral oil are excluded from the production of aluminum pigments.
- The formulation is specifically developed for food packaging applications; under selected test conditions migration limits are underscored

Therefore, ECKART recommends this ink for selected production of packaging for food, beverages and tobacco (indirect food contact). Nevertheless, the customer has to proof the suitability of this ink for the specific application via a migration test or other measures (e.g. use of functional barriers in the packaging design). The inks are not recommended for direct food contact.

### 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 FPG 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 FPG 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 FPG 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 FPG shows, using a UV-lamp capacity of 200 Watt/cm and printing speeds of 100m/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 the ink 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 FPG 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.

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#### Technical product properties:

ULTRASTAR UV/LED FPG	78321 Silver	78322 Silver
<b>Pigment type</b>	PVD	PVD
<b>Pigment characteristics</b>	Leafing	Leafing
<b>Pigment content</b>	Approx. 3,1 %	Approx. 2,9 %
<b>Pigment size (D<sub>50</sub>)</b>	appr. 7 µm	appr. 7 µm
<b>Solvent content</b>	0 %	0 %
<b>VOC</b>	0 %	0 %
<b>Color shade</b>	Chrome like Dark Silver	Chrome like Dark Silver
<b>Viscosity</b>	0,4 Pas	<0,3 Pas

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

#### 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 viscosity:

ULTRASTAR UV/LED FPG inks are supplied with printing viscosity.

##### Dilution:

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

If it is necessary to adjust the viscosity, this can be achieved by a low addition of diluents.

**Migration properties have to be re-checked as dilution of the ink might influence curing properties and thus migration.**

##### Cleaning recommendations:

ULTRASTAR UV/LED FPG 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.

#### Storage and transportation:

ULTRASTAR UV/LED FPG 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.

For further information or samples, please contact:

ECKART GmbH  
Güntersthal 4  
91235 Hartenstein  
Germany

mail: [Info.eckart@altana.com](mailto:Info.eckart@altana.com)

[www.eckart.net](http://www.eckart.net)

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