

<b>Technical Product Information</b>			
<b>UNIPAK LED 485 series</b>			
<b>Article-No:</b>	<b>Product name:</b>	<b>Article-No:</b>	<b>Product name:</b>
023636..	UNIPAK LED 485 871 LITHO INK	023642..	UNIPAK LED 485 877 LITHO INK
025789..	UNIPAK LED 485 872 LITHO INK		
023801..	UNIPAK LED 485 873 LITHO INK		
023761..	UNIPAK LED 485 875 LITHO INK		
<b>REVISION: 7</b>	<b>EDITION: JUNE 2021</b>	<b>IDENT-NO: 00481.E</b>	<b>PAGE 1 OF 2</b>

**Product description:**

UNIPAK LED 485 series are radical curing, solvent free, stable one-component LED offset inks, based on aluminium and gold bronze pigments. Suitable for paper, board and different non-absorbent substrates

The radiation curing (LED light) ink series UNIPAK 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, can't guaranteed for our ink series UNIPAK 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.

**Application:**

UNIPAK LED 485 series are UV curing inks for offset printing on paper and board; e.g., folding cartons.

As with all metallic inks, the substrate has an influence on the final-result. High 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, transfer and curing. In some cases, the use of primers for an improvement of the substrate surface is advantageous.

The inks are suitable to be overprinted in-line. It is recommend curing before varnish applied to preserve the metallic effect. Over lacquering reduces the metallic effect. This influence, as well as the cohesion depend very much on the lacquer and should to test prior to any commercial use.

**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.

**Product properties:**

**Rub resistance:**

UNIPAK LED 485 gold and silver inks are based on leafing pigments and provide good brilliance. The rub resistance is ok. Use UV lacquer for protection, however any finishing reduces the brilliance.

**Intercoat adhesion and lamination properties:**

The leafing properties of the metallic pigments can cause problems with all kind of finishing. Every surface finishing (lacquers, laminates ...) will decrease the metallic brilliance.

In each respective case, individual tests are necessary because of the multiple factors influencing the final-result.

**Chemical resistance:**

The different shades of gold bronze pigments based on an alloy of copper and zinc (brass) in different ratios. These alloys can react with chemicals or natural materials and might change colour shade up to completely decompose the metal pigments. Carefully testing of all materials involved in the whole production process, although not directly involved in the printing process, is absolute necessary before commercial print runs.

**Additional product properties:**

UNIPAK LED	485 gold series	485 silver
<b>Pigment content</b>	approx. 40 %	approx. 15 %
<b>Pigment size (D<sub>50</sub>)</b>	approx. 2 µm	approx. 6 µm

*For technical specifications, please refer to the technical data sheet.*

**Recommended printing parameters:**

**Print Density:**

Measurements need to take with a densitometer including polarisation filter. The given guiding values might change depending on press conditions, substrates, etc.

UNIPAK SuperCure UV	Colour density (cured)	Filter
<b>485 gold series</b>	1.4 – 1.6	Yellow
<b>485 silver</b>	1.0 -1.1	Cyan

**Printing speed:**

The maximum printing speed depends on press conditions, conditions of the UV/LED lamps, substrate and chosen design. Press speeds up to 12.000 sheets per hour are possible.

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**REVISION: 7****EDITION: JUNE 2021****IDENT-No: 00481.E****PAGE 2 OF 2****Fountain solution:**

UNIPAK LED inks can be used with most commercially available fountain solutions. An ideal pH in the range of 5.0 - 5.5 avoids drying problems and tarnishing. High pH levels may lead into poor printability.

Alcohol in damping units can be beneficial to metallic inks (up to 10%). UNIPAK LED inks also print perfect with a wide range of alcohol free fountain solutions. For best printing results, please contact your press chemical supplier.

**Printing plates:**

Polymer layers of printing plates are sensitive to mechanical influences. Differences in the chemical nature of the polymers show significant variances in sensitivity, e.g. CTP plates are known to be more sensitive than conventional plates.

All metallic inks are abrasive by nature and might reduce the plate life circle, depending on pigment grade, the kind of plate and the number of impressions.

We recommend baking the plate to prolong its life.

**Dilution:**

UNIPAK LED inks are press ready and should not dilute. It is not recommended adding reactive diluents, as a negative impact to optical effect, curing speed and stability of the ink could occur.

Max. 1 - 3% of reactive diluents like GPTA, TPGDA or TMP(EO)TA could be added press side. Take caution since there is a risk that properties like water pick up, etc. will change significantly.

**Additives:**

Not recommended. Any modification might influence the stability or the optical properties of the ink and is taken on own risk.

**Cleaning recommendations:**

UNIPAK LED inks can be cleaned by using commercial UV/LED cleaning products.

Contamination of the ink with cleaning agents should be avoided in order to maintain stability and optical properties.

Please refer to the safety data sheet for safety instructions.

**Handling:**

UNIPAK LED inks are stable, one-component, press ready inks - no modifications are needed, nor recommended. However, blending of UNIPAK LED inks with other components should only be done per ECKART's recommendations in order to avoid a possible decrease in quality.

Metallic inks tend to settle 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.

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

**Storage and transportation:**

UNIPAK LED inks should be stored at temperatures below 25°C. Direct sunlight should be avoided.

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

Open containers should never be handled in the direct sunlight, since this results in a preliminary polymerisation.

**Shelf life:**

UNIPAK LED 485 871 LITHO INK	9 months
UNIPAK LED 485 872 LITHO INK	9 months
UNIPAK LED 485 873 LITHO INK	9 months
UNIPAK LED 485 875 LITHO INK	9 months
UNIPAK LED 485 877 LITHO INK	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 out with the conditions above.

For further information or samples, please contact:

ECKART GmbH  
Günterstal 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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