Ultra *Pack* LEDT

Marabu

UV-LED-curable Screen Printing Ink for direct decoration of tubes and containers made from pretreated polyethylene and polypropylene

Flexible ink film, very fast curing, very high scratch resistance, excellent alkaline and chemical resistance, high gloss, silicone-free

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Field of Application

Substrates

Ultra *Pack* LEDT is a UV-LED-curable screen printing ink suitable for printing onto

- Pretreated Polyethylene HDPE/LDPE
- Prereated Polypropylene PP

Before printing onto PE and PP, please keep in mind that the substrate surface must be pretreated by flaming. With this process, surface tension will rise and a very good adhesion from > 44 mN/m is possible. The surface treatment can be tested by appropriate test inks.
The substrate surface must be absolutely free of contaminating residues such as grease, oil, and finger sweat.
Since all the print substrates mentioned may be different in printability even within an individual type, preliminary trials are essential to determine the suitability for the intended use as well as a sufficient adhesion.

Field of use

Ultra *Pack* LEDT was especially designed for direct printing onto packaging and containers.

This ink series is not suitable for direct food contact nor for printing on food contact materials as substances contained in the formulation or introduced by contamination may migrate under certain conditions. Materials that constitute a natural migration barrier are excluded.

If this ink series is nevertheless used for printing on permeable food contact materials, the manufacturer of the printed product is responsible for ensuring that its products comply with legal or industry-specific requirements.

For printing on permeable food contact materials (= without appropriate migration barrier), we recommend our specially designed Ultra *Pack* UVFP / Tampa® *Tex* TPX.

Characteristics

Ultra *Pack* LEDT is a silicone-free ink system.

For silicone-free products it is important to use only thoroughly cleaned stencils, squeegees, ink pumps, tubes (in the case of an automatic ink supply), and injectors for the manual ink filling of the stencil, etc.

If cleaning is carried out with automatic screen washing systems, we recommend prior to printing an additional manual cleaning with a fresh cleaner not having had any contact with ink residues containing silicone.
Care should be taken with some adhesive tapes, used to protect the outer areas of the print region, as the release agent of the tape may be silicone.

Ink Adjustment

Recommendation
The ink should be stirred homogeneously before printing and if necessary during production.

Drying

Ultra *Pack* LEDT is a very fast curing UV-LED-ink.

LED Curing:
LEDT requires a wavelength range of 385 - 395 nm for LED curing.

UV curing:
A UV-curing unit with one medium pressure mercury vapour lamp (180- 240 W/cm) will cure LEDT.
The curing speed of the ink is generally dependant upon the kind of UV-LED-curing unit (re-

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flectors), number, age, and power of the UV-lamps or LEDs, the distance between UV/LED lamps and substrate (distance from the substrate to the actual LED array, not including the housing!), the printed ink film thickness, color shade, substrate in use, as well as the exposure time to the curing unit.

Ultra *Pack* LEDT is a post-curing ink which will achieve its final adhesion and resistances after 24 h. The ink film should pass a cross-cut tape test right after being cured, or after having cooled down to room temperature.

As with all radical curable printing inks, the presence of residual monomers and photoinitiators' decomposition products cannot be completely ruled out even after sufficient curing. If these traces are relevant for the application, this must be taken into account in individual cases, as this depends on the actual printing and curing conditions.

Please make sure that waste prints are also completely cured, otherwise they are subject to the same disposal rules as liquid ink residues (hazardous waste).

Stress resistance

After proper and thorough drying, the ink film exhibits outstanding adhesion as well as rub, scratch and block resistance and is resistant to solvents (see DIN 16 524), alcohol (96 % ethanol), finger sweat, and further common alkaline and acid fillers.

Range

Basic Shades

922	Light Yellow
924	Medium Yellow
926	Orange
932	Scarlet Red
934	Carmine Red
936	Magenta
950	Violet
952	Ultramarine Blue
956	Brilliant Blue
960	Blue Green
962	Grass Green
970	White
980	Black

High Opaque Shades

170	Opaque White
180	Opaque Black

Further **Products**

904	Special Binder

All shades are intermixable. Mixing with other ink types or auxiliaries must be avoided in order to maintain the special characteristics of this ink.

Auxiliaries

UVV 1	Thinner	1-10%
UV-B 1	UV Accelerator	1-4%
STM	Thickening Agent	0.5-2%
UV-TA 1	Thickening Agent	0.1-0.5%
UR 3	Cleaner (flp. 42°C)	
UR 4	Cleaner (flp. 52°C)	
UR 5	Cleaner (flp. 72°C)	

If necessary, the addition of thinner can reduce the ink viscosity and increase the cure speed. An excessive addition of thinner will cause a reduction of the curing speed, as well as of the printed ink film's surface hardness. The thinner becomes part of the cross-linked matrix when cured and may slightly change the inherent odour of the printed and cured ink film.

UV-B 1 accelerates the curing speed if necessary and may increase the adhesion to the substrate owing to a better depth curing.

The Thickening Agent STM enhances the ink's viscosity without significantly influencing the degree of gloss. Please stir well, the use of an automatic mixing machine is recommended.

The liquid Thickening Agent UV-TA 1 increases the viscosity and improves the dot definition at higher processing temperatures.

The cleaners UR 3 and UR 4 are recommended for manual cleaning of the working equipment. Cleaner UR 5 is recommended for manual or automatic cleaning of the working equipment.

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Printing Parameters

Selection of fabric depends on the printing conditions, the desired curing speed and mileage as well as the required opacity. Generally, fabrics of 140-31 to 180-31 can be used. A uniform screen tension (> 16 N) of all fabrics used is further important. For UV inks, all commercially available capillary films (15-20 µm) or solvent resistant photo emulsions and combined stencils can be used.

Shelf Life

Shelf life depends very much on the formula/reactivity of the ink system as well as the storage temperature.
For an unopened ink container it is

- 2 years for color shades 170 Opaque White and 180 Opaque Black
- 1 year for all other standard products

We recommend our products to be stored in a dark, dry and well-ventilated surrounding, providing an ambient temperature of 5 °C - 35 °C. Please protect from heat and direct sunlight.
If storage conditions do not comply with this recommendation, the shelf life is no longer guaranteed.

Note

Our technical advice whether spoken, written, or through test trials corresponds to our current knowledge to inform about our products and their use. This is not meant as an assurance for certain properties of the products nor their suitability for each application.
You are, therefore, obliged to conduct your own tests with our supplied products to confirm their suitability for the desired process or purpose. The foregoing information is based on our experience and should not be used for specification purposes. All characteristics described in this Technical Data Sheet refer exclusively to the standard products listed under "Range", provided that they are processed in accordance with their intended use and only when used with the recommended auxiliaries. The selection and testing of the ink for specific applications is exclusively your responsibility. Should, however, any liability claims arise, they shall be limited to the value of the goods delivered by us and utilised by you with respect to any and all damages not caused intentionally or by gross negligence.

Labelling
For Ultra *Pack* LEDT and its auxiliaries, there are current Material Safety Data Sheets available according to EC regulation 1907/2006, informing in detail about all relevant safety data including labelling according to EC regulation 1272/2008 (CLP regulation). Such health and safety data may also be derived from the respective label.

Safety rules for UV-LED printing inks
UV-LED-inks contain some substances which may irritate the skin. Therefore, we recommend to take utmost care when working with UV-LED-curable printing inks. Parts of the skin soiled with ink are to be cleaned immediately with water and soap. Please read the notes on labels and safety data sheets.

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