



UV-curable screen printing ink for all Optical Disc Formats

Optimized rheology, high-gloss surface, excellent print sharpness, good opacity, press-ready

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Field of Application

Ultradisc UVOD is a UV-curable screen printing ink suitable for printing onto all optical disc formats such as CD, CD-R/ RW, CD-ROM, and DVD with spin coatings as well as directly onto PC. Since the different spin coatings are subject to a certain post-curing, overprinting with Ultradisc UVOD should generally be carried out as soon as possible.

Preliminary trials as to the compatibility of the spin coat and the printing ink are essential.

Characteristics

Ink characteristics

Ultradisc UVOD colour shades are high-glossy and very brilliant at a best possible opacity.

The optimized thixotropic adjustment of the ink (rheology) guarantees an easy handling at the printing machine and prevents the ink from flowing back into the printing motif.

Further characteristics

- excellent print sharpness during print run
- tested according to environmental chamber tests, common to the CD industry
- very good and homogeneous ink flow
- very fast curing and printability up to 6000-8100 prints/h

Adjustment of the ink

Ultradisc UVOD is press-ready. Please stir well before printing, however.

Resistances

UVOD has been tested as follows:

Criteria	Testing method	Result
1. adhesion	tape test with No. 4104 / 25mm	positive
2. hardness	pencil hardness as per Wolff Wilborn	3H
3. alcohol resistance	100 double rubs (500 gs) with ethanol 99,8 %	no changes
4. rub resistance	50 double rubs, dry (weight 500 gs)	no rubbing through
5. sweat/saliva resistance	reaction under test solvents after 2 h	no changes
6. solvent resistance	5 min in solvent mix and 50 double rubs (500 gs) soaked with solvent mix	no changes
7. environmental chamber test	500 h/60°C and 85% relative humidity, 21 cycles at: 25°C/ 95 RH – 12h 45°C/ 85 RH – 12h	passed

Test conditions in detail

1. Tape no. 4104/25 mm from Beiersdorf should be applied under thumb pressure and removed in one go. This test should be repeated at two different spots. If no ink is removed, the requirements for ink adhesion are met.
2. Test with an Erichsen pencil hardness device
3. 100 double rubs with a paper soaked with ethanol (99.8 %)
4. Rub resistance with a test device from Prüfbau, with 500 gs of weight and different rub fleeces
5. Sweat and saliva resistance as per DIN 53, reaction time of the test solvents: 2 h.

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6. Solvent resistance as per DIN 16 524, reaction time of the solvent mix for 5 min and 50 double rubs with paper soaked with the solvent mix (Test solvent: 30 vol. % ethylacetate, 10 vol. % ethyl glycol, 10 vol. % acetone, 30 vol. % ethyl alcohol + 20 vol. % toluene)
7. Environmental chamber tests carried out with an environmental test chamber from Heraeus Vötsch, HC 4020 type.

Curing

Ultradisc UVOD is a fast curable UV ink. A UV drying unit with one medium pressure Mercury Vapour Lamp (capacity 150 - 200 W/cm) will cure UVOD. Generally, the curing speed of the ink depends on the type of UV dryer (reflectors), the number, age and capacity of the UV tubes, the printed ink layer, colour shade, and printing speed.

Mileage

The mileage per kg of ink with a 150-31 fabric is approx. 6,000 to 7,000 CD's if the whole surface is printed, or up to 25,000 CD's with text (coverage e. g. 25 %).

Fabrics and stencils

Generally, fabrics of 140-31 to 180-27 threads can be used. Generally, a plain weave, as well as a high and uniform tension of the fabric are important (> 20 N).

Recommendations:

Standard shades:	150-31
4-clr. process shades:	165-27/31 to 180-27
Opaque White:	150-31
CD-R Package, fluorescents,	
ML, MW, DOC, bronzes:	140-31 or 150-31
Ink-Jet Varnish UVOD-IJL:	140-31 or 140-34

For UV inks, all commercially available solvent resistant capillary films (12-20 µ) or photo emulsions and combined stencils can be used. Especially when 4-colour process printing, an emulsion layer of 5 µm maximum thickness is recommended.

Range

Basic shades

(See colour chart System Ultracolor)

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

All shades are intermixable. To maintain the special characteristics of this outstanding ink range, UVOD should not be mixed with other ink types.

These 13 basic shades are included in our Marabu-ColorFormulator. They build the basis for the calculation of individual colour matching formulas, as well as for shades of the common colour reference systems Pantone®, Pantone - Metallic Guide®, HKS®, DIC®, and RAL®. All formulas are stored in the Marabu-Color Manager 2 (MCM 2) software.

All shades are based on organic pigments, therefore, the heavy metal content complies with the EEC regulations EN 71, part 3, "safety of toys" - migration of specific elements.

High-opaque white shades

All opaque whites have a high opacity and a viscosity adjustment suited for high printing speeds (75-135 sequences/min). They further excel owing to their best possible white shade. For a possible overprinting with waterless UV-curable 4-colour process offset shades, please use our Ultraset UVOS ink type.

UVOD 170 Opaque White

Glossy, suited for DVD/CD. Excellent tilt results and very good offset over-printability (up to 135 passes/min).

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UVOD 171 Opaque White

High gloss, suited for DVD/CD. Good offset over-printability (up to 100 passes/min).

UVOD 172 Opaque White

Satin gloss, suited for DVD/CD. Very good tilt results and excellent offset over-printability. Smooth surface, squeegee marks and mesh structures are hardly visible (up to 100 passes/min).

UVOD 173 Opaque White

High gloss, suited for DVD/CD. Especially for High Speed machines with up to 135 passes. Highly reactive with best offset over-printability (up to 135 passes/min).

UVOD 179 Opaque White

Glossy, well-priced, excellent printability with a very good homogeneous ink flow, suited for CD/CD-R printing (up to 90 passes/min).

Opaque White for rotary printing

Ultrasprint UVT 170 Opaque White

Low-viscosity opaque white developed for rotary screen printing machinery, very good offset over-printability.

Ultrastar UVS 170 Opaque White

High-viscosity opaque white used in rotary screen printing or flexo printing, very good offset over-printability.

Opaque Black

UVOD 180 Opaque Black

Deep black with high opacity.

UVOD 181 Opaque Black, matt

Opaque black with a very high degree of black and a mat, velvety surface. UVOD 181 is best suited for special matt effects but can also be combined with glossy varnishes for partial overprinting.

4-colour process shades

The following sets of 4-clr. process shades are available:

Highly transparent 4-clr. process shades

UVOD 428 Process Yellow (Yellow)
 UVOD 438 Process Red (Magenta)
 UVOD 458 Process Blue (Cyan)
 UVOD 488 Process Black (Black)
 UVOD 409 Transparent Base

(Recommended printing sequence:

Cyan, Magenta, Yellow, Black)

Highly transparent 4-clr. process shades with low density (light)

UVOD 425 Process Yellow (Yellow)
 UVOD 435 Process Red (Magenta)
 UVOD 455 Process Blue (Cyan)
 UVOD 485 Process Black (Black)
 UVOD 409 Transparent Base

(Recommended printing sequence:

Cyan, Magenta, Yellow, Black)

Compared to the high-transparent process shades, the pigmentation of this set has been reduced by 20% and is therefore best suited for printing skin tones. Both the highly transparent sets of 4 colour process shades can be over-printed as well as pre-printed.

Standard 4-colour process shades

UVOD 429 Process Yellow (Yellow)
 UVOD 439 Process Red (Magenta)
 UVOD 459 Process Blue (Cyan)
 UVOD 489 Process Black (Black)
 UVOD 409 Transparent Base

(Recommended printing sequence:

Yellow, Magenta, Cyan, Black)

Additives

UVOD 912 Print Varnish

High-glossy, transparent overprint varnish for coating offset and 4-colour process screen prints.

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UVOD 409 Transparent Paste

Thixotropic paste to aid 4-colour-process prints, fine detail or reverse printing. When adding transparent base, the density of the 4-colour process shades may be reduced.

UVOD 904 Special Binder

To be used for an individual addition of varnish to basic shades.

CD-R Match Package

Very universal mixing system consisting of 4 differently structured varnishes and 6 transparent colour concentrates. According to the product selection and variation in quantity to be added, it is possible to achieve a great variety of colour effects.

Varnishes

UVCD 913	milky-matt
UVCD 914	satin gloss-transparent
UVCD 915	semi-structured *
UVCD 916	structured *

* not suitable for DVD r/rw

Concentrates

UVCD 522	Light Yellow
UVCD 532	Scarlet Red
UVCD 536	Magenta
UVCD 550	Violet
UVCD 556	Brilliant Blue
UVCD 560	Blue Green

According to the required effect, it is possible to add 5-20 % of concentrate to the ink.

Further CD-R Products

UVOD-ML Matt Varnish, writable

UVOD-ML is best suited for the overprinting of screen and offset prints and is writable with common waterproof marker pens. Furthermore UVOD-ML can be overprinted with the UVOD basic shades.

UVCD 914 Protection Varnish

The CD-R is coated with UVCD 914 as an additional protection in screen printing in order to reduce the surface sensitivity and handling in general. The smooth protection coat can be overprinted with the products UVCD-MW, as well as with the System Ultracolor shades for graphic designs.

UVOD-IJL Ink-Jet Printable Varnish

Matt, press-ready ink-jet varnish for the printing of CD'Rs or DVD'Rs and a following professional decoration with Desktop Ink-Jet Printers, such as Primera, Epson or Canon. The aqueous ink is hereby absorbed by the matt surface of the varnish and will dry in a short time to a rub-resistant decoration.

For UV curing, one UV station with a printing speed of up to 75 passes/min is necessary. If high-quality applications with a higher brilliance are required, it is possible to carry out a pre-print with UVOD 170 White. Further information can be found in the separate ProductINFO UVOD-IJL.

UVCD-MW Matt White, writable

This matt, white printing ink can be printed either onto the UVCD 914 surface or directly the spin-coating/PC. The surface can be easily written onto with commercially available waterproof markers. For further decoration, UVCD-MW can be overprinted with UVOD Basic Shades without any problems (matt/glossy effects).

Bronzes

(to be mixed with UVOD 912)

S-UV 191	High-gloss Silver (5:1)
S-UV 192	Rich Pale Gold (4:1)
S-UV 193	Rich Gold (4:1)

The mixture of bronze paste and binder has a shelf life of approx. 6 months.

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Fluorescent shades (press-ready)

UVOD 320	Fluorescent Yellow
UVOD 323	Fluorescent Orange
UVOD 331	Fluorescent Red
UVOD 333	Fluorescent Pink
UVOD 364	Fluorescent Green

Mixtures of UVOD fluorescent shades with UVOD basic shades must be processed within 8 hours.

Auxiliaries

UVV 1 or UVV 2 Thinner

Thinner for the reduction of the ink viscosity.
Addition: 1 - 10 % parts by weight.

An excessive amount of thinner must be avoided and will reduce curing speed and surface durability of the printed ink film.

UV-VM Levelling Agent

To rectify flow problems (e.g. bubbles etc.)
Addition: 0.5 - 1.5 % parts by weight

The addition may reduce intercoat adhesion when overprinting.

STM Thickening Agent

Helps to increase the ink's viscosity.
Addition: 0.5 - 2 % parts by weight

Please stir well before printing. The use of an automatic mixing machine is recommended.

Cleaning

Cleaners UR 3 (flame point 42°C) or UR 4 (flame point 52°C) can be used.

Shelf Life

Shelf life depends very much on the formula/reactivity of the ink system as well as the storage temperature.

It is one year for all UVOD colour shades for an originally closed ink can if stored in a dark room at a temperature of 15-25°C. Under different conditions, particularly higher storage temperatures, the shelf life is reduced. In such cases, Marabu's warranty expires.

Labelling

For our ink type Ultradisc UVOD and its additives and auxiliaries there are current Material Safety Data Sheets according to EC-regulation 91/155, covering in detail all relevant safety data including the labelling according to the present EEC regulations as to health and safety labelling requirements. Such health and safety data may also be obtained from the respective label.

Safety regulations for UV screen printing inks

We recommend that UV screen printing inks and auxiliaries should be handled with particular care. Follow the instructions given on the labels and in the Material Safety Data Sheets.

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 selection and testing of the ink for specific application is exclusively your responsibility. Should, however, any liability claims arise, such claims 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.