

UVALUX® U41 Series

Low-Migration Ink Series for UV Offset Printing

Characteristics

With the **UVALUX® U41** we present a low-migration ink series, especially for printing of packaging for food in UV offset printing. It is predominantly designed for paper substrates but can also be used for many foils.

UVALUX® U41 was specially developed for high machine speeds and is characterized by its low-odour.

Printing Process:

UV Web Offset, UV Sheetfed Offset

Technical Data

Properties:

- low migration (see page 4)
- very good ink transfer
- optimized ink-water balance
- high colour strength
- low odour
- high reactivity
- low ink misting
- VOC free
- suitable for laserprinting
- Nestlé-conform (see page 4)

Marking

Marking according to EC legislation:

Our inks are classified and marked according to EC legislation and the German "Gefahrstoffverordnung" (German dangerous substances regulation). The material safety data sheet (MSDS) is available on request.

Packaging

Standard packaging: 2,5Kg cans

Substrates

The **UVALUX® U41 series** is especially suitable for all papers and cardboards common in the market, particularly also for stocks for labels and wrap-arounds.

Although **UVALUX® U41** will also work on many foils we recommend for foil-materials, in moulds etc. our low-migration **UVALUX® U71 series** which is optimized for these applications (see separate technical information). Should you want to use **UVALUX® U41** on foils we urgently recommend to overvarnish the print.

Important:

Before beginning to print we recommend pretests, in order to test the desired characteristics of the finished product. On request we are also able to make test prints for you on your specific substrate.

Technical Service Centre

Kindly note that we are ready at any time for competent technical application support on your site.

Please contact our technical service centre for printing inks:

Ink-Service@Zeller-Gmelin.de

Tel: +49 7161 802-279

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TI Endlos TI-UVALUX U41_E, edition of February 21, 2011, replaces the previous edition dated September 16, 2010.

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ZG Division: Printing Inks

Zeller+Gmelin GmbH & Co. KG

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Technische Information

Opaque Whites

The **UVALUX® U41** types of opaque white are characterized by their high opacity at low ink lay down and their very good scratch resistance. All types of opaque white are resistant against spirit, solvent mixture and alkali (according to DIN 16524).

- **UVALUX® U41-X55001**
Standard opaque white, undyed
- **UVALUX® U41-X55002**
Opaque white, dyed

Additives

UVALUX® U0012 UV Reducer

Addition max. 5%

Reduces the viscosity and the tack.

UVALUX® U0088 UV Printing Paste

Addition max. 10%

Reduces the tack without reducing the viscosity significantly.

W963 UV Wash Up

Suitable for cleaning inking systems, sleeves, plates, blankets, etc.

Remark:

The addition of any additive might change the overall characteristics of the printing ink.

Service

Complete PANTONE® mixing recommendations based on our **UVALUX® U41-P...PANTONE®** base inks or based on our high- and monopigmented **UVALUX® U41-Z2...** base inks.

Ink dispensing, mixing and measuring systems with different expansion levels.

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Storage

Optimal storage conditions:

The optimal storage temperature is 20°C. Higher storage temperatures reduce the shelf-life.

Remarks:

- store in a cool and dark place
- protect from frost
- ink should be closed immediately after usage

Warranty:

If the inks are stored correctly, we guarantee a shelf life of 6 months from date of delivery, as our raw material suppliers guarantee this period to us. However we know from practical experience that the inks can remain usable for 1-2 years or longer if they are properly handled and stored.

Hints for Practical Use

We recommend using ester and ketone resistant rollers (EPDM-material).

The inking roller, rubber blanket and printing plate have to be resistant against UV-inks und UV-detergents (see manufacturers instructions).

Approved fountain solution parameters:

pH-value: 4,8 – 5,2

Water hardness: 9 – 12° dH

We recommend the use of temperature controlled ink ducts and fountain solution.

Technische Information



Product Designation

Process Inks:

U41-S...	normal version
U41-S...S	high light resistant version

Base Inks:

U41-Z2...	monopigmented base inks
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PANTONE®

U41-P...	PANTONE® base inks
U41-P...S	high light resistant version PANTONE® base inks

PANTONE®

U41-C...	PANTONE® mixed shades "Coated"
U41-U...	PANTONE® mixed shades "Uncoated"

Special Colours: U41-X...

Opaque White: U41-X55...

Transparent White: U41-X60001

Because of the better colour control when mixing with monopigmented ink **formulations are better reproducible and thus the production security is higher.**

Additionally there are less colour deviations between reference sample and mixed ink under changing light sources (metamerism).

Further Advantages:

- The higher colour-intensity makes printing with reduced ink lay-down possible.
- Reduced dot gain.
- More flexibility when adjusting colour strength for solids or fine texts.
- Mixing recommendations are available for all PANTONE® mixed shades.
- Ink dispensing, mixing and measuring systems with different expansion levels available.

Monopigmented Base Inks

For ink mixing we recommend our mono-pigmented **UVALUX® U41-Z2...** base inks. It is a print-ready system, with maximum colour strength.

The **UVALUX® U41-Z2...** base inks contain only one pigment respectively. Each pigment in a mixed ink has an influence on the resulting colour shade. The fewer pigments are included in a mixed shade the easier it is to match and adjust the colour shade of the reference sample.

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Remarks on Migration and Conformity

The following remarks are valid for the production of food packaging which conforms to the regulations in the European Union. We can not make any statements concerning food packaging legislation of countries outside the EU.

Regulation (EC) No. 1935/2004 requires that the one responsible for the “placing on the market” of a packaging article must have an appropriate documentation available to demonstrate the compliance with the rules related to food processing and distribution.

Not only the used materials have an influence on the food-legislation related properties of a packaging. The production process of the packaging has a significant impact as well.

Therefore we recommend that you send your finished products to a recognized analytical institute for examination and certification. That way you can prove that your products comply with the legal requirements.

The transfer of substances from the packing into the filling is called migration. The following production parameters have a significant influence on the grade of migration:

- correct processing, especially the complete through-cure of the ink film
- type of substrate and substrate thickness (sufficient barrier effect of the substrate)
- prevention of a direct contact of the printing ink with the food
- use of low-migration printing inks

Therefore we recommend for printing of food packaging our special low-migration **UVALUX® U41** ink series.

Analytical results prove that with **UVALUX® U41** the 10ppb migration limit is well achievable (Directive 2007/19/EG) in migration tests with 95% ethanol.

Therefore it is with these inks possible to fulfil the legal requirements of EC regulation 1935/2004.

This statement is based on the conditions that the **UVALUX® U41** inks are processed professionally, the substrate has a sufficient barrier effect and that there is no direct contact of the ink with the food.

We formulate the **UVALUX® U41** inks in such a way that potential migration is as low as possible, both through the substrate and by set-off from the print-surface to the food contact surface in the stack or reel.

We produce **UVALUX® U41** inks in accordance with the “good manufacturing practices for the production of packaging inks formulated for use on the non food contact surfaces of food packaging and articles intended to come into contact with food” (GMP) of CEPE/EuPIA (see www.eupia.org).

Products of the series **UVALUX® U41** are formulated in accordance with the Nestlé Guidance Note on Packaging Inks.

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Technische Information



Resistance Properties UVALUX® U41 Process Inks						
Colour Shade	Item Number	Light Resistance	Spirit	Solvent Mixture	Alkali	Colour Shade
Process Inks						
Yellow	U41-S1100	4	+	+	+	
Magenta	U41-S1200	5	+	+	-	
Cyan	U41-S1300	8	+	+	+	
Black	U41-S1400	8	+	+	+	
High Light Resistant Version						
Yellow	U41-S1100S	6-7	+	+	-	
Magenta	U41-S1200S	6-7	+	+	+	

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Resistance Properties UVALUX® U41 PANTONE® Base Inks						
Colour Shade	Item Number	Light Resistance	Spirit	Solvent Mixture	Alkali	Colour Shade
PANTONE®						
Yellow	U41-P100	4	+	+	+	
Yellow	U41-P100S	6-7	+	+	-	
Yellow 012	U41-P101	4	+	+	+	
Yellow 012	U41-P101S	6-7	+	+	-	
Orange 021	U41-P150	6-7	+	+	+	
Warm Red	U41-P200S	5	+	+	+	
Red 032	U41-P201	6-7	+	+	+	
Rubine Red	U41-P202	5	+	+	-	
Rubine Red	U41-P202S	6-7	+	+	+	
Rhodamine Red	U41-P203S	6-7	+	+	+	
Purple	U41-P250S	6-7	+	+	+	
Violet	U41-P251S	6-7	+	+	+	
Reflex Blue	U41-P300S	6-7	+	+	+	
Process Blue	U41-P301	8	+	+	+	
Blue 072	U41-P302S	6-7	+	+	+	
Green	U41-P350	8	+	+	+	
Black	U41-P400	8	+	+	+	

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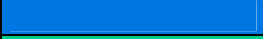


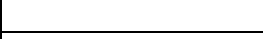

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Technische Information



Resistance Properties UVALUX® U41 Z2 Base Inks						
Colour Shade	Item Number	Light Resistance	Spirit	Solvent Mixture	Alkali	Colour Shade
Yellow	U41-Z2100	7	+	+	+	
Yellow	U41-Z2101	4	+	+	+	
Yellow	U41-Z2102	7	+	+	-	
Orange	U41-Z2150	6	+	+	+	
Red	U41-Z2201	6-7	+	+	+	
Red	U41-Z2202	6-7	+	+	+	
Red	U41-Z2203	5	+	+	-	
Red	U41-Z2205	6-7	+	+	+	
Violet	U41-Z2251	6-7	+	+	+	
Blue	U41-Z2302	8	+	+	+	
Green	U41-Z2350	8	+	+	+	
Black	U41-Z2400	8	+	+	+	
Opaque White	U41-Z2500	8	+	+	+	
Transp.White	U41-Z2600	n.r.	+	+	+	

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Declaration of Composition and Product Declaration

As there are no specific regulations concerning printing inks and varnishes Zeller+Gmelin -like other ink suppliers- is obliged to follow regulations in the EU not directly related to printing inks.

Regulation 1935/2004

Article 3 of the Regulation 1935/2004 (impact on food) demands, that materials and articles do not transfer their constituents to food in quantities which could endanger human health or bring about an unacceptable change in the composition of the food or bring about a deterioration in the organoleptic characteristics thereof.

We urgently advise you to use for printing on food packaging only printing inks/lacquers which we specifically recommend for this application and which have a low-migration formulation (see page 1 and 4 of this document).

A possible impact on the quality of food does not solely depend on the printing ink/lacquer itself but is depending on the complete production chain (ink laydown, UV-power, substrate, etc.). For this reason we can generally not confirm a compliance to Regulation 1935/2004 only based on the composition of the ink/lacquer.

Based on Article 17 (traceability) material and articles shall be ensured at all stages in order to facilitate control, the recall of defective products, consumer information and the attribution of responsibility.

All raw materials for ink/lacquer batches at Zeller+Gmelin are documented in writing on the Formula Component Report. Based on the batch number every raw material can be clearly traced back to the raw material batch.

Directive 2002/72/EC

this so-called "plastics directive" lists substances which are allowed to get into direct contact with foodstuffs. It also sets migration limits for each substance up to which the substances are allowed to migrate into the food (listed in the annex of the directive and its amendments). Printing ink/lacquer components are not allowed to get into direct contact with foodstuffs and are therefore not included in this list. This is the reason why we can not confirm the conformity of our products with directive 2002/72/EC.

Directive 2007/19/EC

This Directive, which is an amendment to the Plastics Directive 2002/72/EC, provides limits for substances not listed in the corresponding annexes of the Plastics Directive and amendments. Most components used in printing inks/lacquers are not intended to get into direct contact with foodstuff. Therefore directive 2007/19/EC does not indicate specific migration limits for them. For these substances without SML a general limit of <10ppb (10 µg/kg food) for the transfer into food has to be undercut (Article 7). Again, many different factors have an impact on the migration (see remark under 1935/2004). Therefore a compliance to Directive 2007/19/EC can not be confirmed.

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CEPE / EuPIA – Exclusion List

CEPE is the European Council of producers and importers of paints, printing inks and artists colours whereas EuPIA is the European Printing Ink Group of CEPE. The printing ink industry voluntarily came up with the Exclusion List for specific substances many years ago.

Zeller+Gmelin is an active member in the EuPIA and subgroups. The raw materials used by Zeller+Gmelin for the formulation of our printing inks/lacquers meet the guidelines of the CEPE / EuPIA Exclusion list. This means that CMR-substances (cancerogenic, mutagenic and reprotoxic) plus T (toxic) and T⁺ (very toxic) are not used in our printing inks/lacquers.

Heavy Metals

CONEG stands for Coalition of North-Eastern Governors in the USA . One of their legislations, adopted by 18 states as of 1998, requires reductions in the amount of the four heavy metals mercury, lead, cadmium, and hexavalent chromium in packaging and packaging components sold or distributed in their member states. For Zeller+Gmelin printing inks/lacquers the limits for heavy metals as listed in the CONEG-Regulation (USA) are met. The Euro Norm 71.3 refers to the max level of heavy metals in childrens toys. For Zeller+Gmelin printing inks/lacquers the limits for heavy metals as listed in the DIN EN 71-3 are met.

Heavy metals are no part of our formulations.

Hazardous substances

Substances mentioned in the directive **2002/95/EC** (RoHS) are not intentionally used in our formulations printing inks/lacquers.

SVHC-substances (substances of very high concern): In our products no substances are used which meet the criteria of SVHC-substances (substances of very high concern). SVHC-substances are substances which are classified as CMR 1 & 2, PBT (PBT pollutants are chemicals that are toxic, persist in the environment and bioaccumulate in food chains), vPvB (Substances that are potentially very persistent and very bioaccumulative) und endocrine disruptors (artificial hormones).

The substances listed in the guide line **67/548/EEC** (amended by the directive **2006/121/EC**) and in the guide line **76/769/EEC** are not part of the formulation of our printing inks/lacquers.

Furthermore we confirm that our printing inks/lacquers are in accordance with the EC regulation **1895/2005** (repeals the guide line **2002/16/EC**).

ISO 9001

The production site of Zeller+Gmelin / Germany is certified according to DIN EN ISO 9001:2000 and DIN EN ISO 14001:2005 (corresponds to EN ISO 14001 edition Nov. 2004).

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Technische Information



Please note:

According to applicable law the manufacturer of the finished article and the filler have the full legal responsibility to ensure that their product is fit for its intended purpose and complies with the applicable rules (not the supplier).

Please also consider the relevant publications of the European Printing Inks Association EuPIA (<http://www.eupia.org>).

There are many types of final packaging and the printing ink/lacquer is only one constituent. Since the parameters in the printing, packing and storage processes are not under the control of the printing ink manufacturer, the printing ink suppliers are not able to issue certificates or declarations of compliance which cover the legal responsibility of the entire packaging chain (Text from EuPIA-PIFOOD May 2007).

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ppa.
M. Ruckstädter
Sales Manager



i.V.
A. Rascher
Head of Product Management

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