Océ
DirectPress®
Technology

Get the best results

océ

Canon
CANON GROUP

Guidelines for offset preprinted media

Edition December 2011

Introduction

Monochrome (toner based) digital printing systems are often used to print information on offset preprinted media. Offset preprinted media will expose the printing systems to offset inks and in many cases drying powders as well. Due to the fundamental steps in the digital printing process - which are for instance transfer of the image onto the paper and fixation (fusing) of this image by applying heat and/or pressure - the performance of digital printing systems can (seriously) deteriorate if these inks and powders are not suitable for digital printing.

Inks and powders can seriously impact printing systems using both traditional electrophotographic printing technologies as well as the unique Océ DirectPress technology.

However, due to the differences in the technology, there is some variation in how these technologies can be impacted by preprinted media. These guidelines tell you in detail how you can ensure optimal performance with preprinted media on Océ DirectPress systems.

Recommended offset inks and varnishes

Optimal performance can only be achieved when the preprinted media are produced (sheet-fed or web-fed) in accordance with the sound craftsmanship guidelines for offset printing. Thick ink layers, excessive use of drying powders, extremely short drying times and/or improper curing may seriously impact the performance of your digital printing system. For optimal print conditions, please see the ink and varnish manufacturer's instructions.

The following inks and varnishes have proven optimal performance with the Océ VarioPrint DP Line within the established operating conditions. These guidelines are based on offset ink and varnish layers, offset printed on plain paper. Oxidative drying offset inks require time for the drying process to complete. UV curing offset inks require a good combination of UV intensity and offset process speed.

On page 6 to 9 of this document you can find the lists of all recommended offset inks and their product codes. The lists are subject to continuous modification. Please contact your service organisation to check the latest status.

Conventional offset inks/varnishes (oxidative drying)

Performance after:	72 hours	120 hours	168 hours	Availability
Epple ProLaser	***	***	***	US / EU
Sicolor MultiLaser	***	***	***	EU
Van Son Laser Plus	*	***	***	US / EU
Toyo BioPlus High Solid	*	***	***	US / EU / AP
Flint Novaform E80	*	*	***	US / EU / AP
Huber HBL	*	*	***	EU

UV offset inks/varnishes (ultraviolet curing)

Performance using: (after 2 days)	200 W / cm 150 m / min	400 W / cm 150 m / min	600 W / cm 150 m / min	Availability
Zeller+Gmelin Uvalux 20	*	***	***	US
Zeller+Gmelin Uvalux 40	*	*	***	EU
Suncure Laser	*	*	***	US / EU

* = not approved
*** = optimal performance
US = United States of America
EU = Europe
AP = Asia Pacific

Disclaimer
The offset inks and coatings are recommended on the basis of functionality in Océ printers. For safe handling and use of recommended offset inks and coatings, consult respective Material Safety Data Sheets (MSDS) and other safety instructions provided by the respective ink and coating supplier.

WARNING: If you use non-recommended inks and varnishes there is a serious risk that you may cause damage to important parts of the printing system - resulting in deterioration of the print quality, downtime and additional (service) costs.

Coatings

A coating is an aqueous dispersion lacquer. Like inks, varnishes and drying powders, dispersion coatings can also seriously impact printing systems using both the traditional electrophotographic printing technologies as well as the unique Océ DirectPress technology. Not all coatings can be used with Océ DirectPress technology. It is important to clean the offset coating station thoroughly, before using the approved coating.

The drying process of dispersion coatings takes place through absorption into the printing substrate or through evaporation. The surface of the coating should be rub-proof approximately 10 seconds after the sheets are removed. The complete build-up reaches it's final properties regarding adhesion and scratch resistance after the underlying printing ink is completely dry. The total drying time is dependent on the substrate, but should be at least the number of days with a three-star rating mentioned for the drying of the individual inks on page 3 of this document, taking into account a minimum drying time of 120 hours.

The following dispersion coatings have proven optimal performance with the Océ VarioPrint DP Line within the established operating conditions and on low-porosity papers only.

Aqueous dispersion coatings (water evaporation)

Supplier/code:	Availability
Schmid Rhyner Galacryl 82.315.12 Primer Glanz	US / EU / AP
Schmid-Rhyner Galacryl 82.315.13 Primer Matt	US / EU / AP
Vegra DL-Glanz VP 10667/050 für Thermodirektdruck	US / EU / AP
Vegra DL-Matt VP 10720/050 für Thermodirektdruck	US / EU / AP
Hi-Tech Hi-Coat W3387-45 Heat Resist Gloss	US / EU / AP

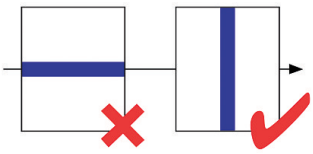
US = United States of America
EU = Europe
AP = Asia Pacific

Disclaimer
The offset inks and coatings are recommended on the basis of functionality in Océ printers. For safe handling and use of recommended offset inks and coatings, consult respective Material Safety Data Sheets (MSDS) and other safety instructions provided by the respective ink and coating supplier.

Tips and Tricks

General Tips and Tricks for optimal performance of offset preprinted media on digital printing systems.

- Avoid using magnetic, conductive, fluorescent or metallic inks.
- Test a small batch of preprinted media before ordering large quantities produced under identical conditions.
- Try to avoid having large preprinted areas in the direction of the paper path where possible.



- Mix preprinted jobs with (preferably large) jobs on non-preprinted paper.
- Avoid thick ink layers. Consult the technical information provided by your ink supplier.
- Minimise the use of drying powders. Excessive use of drying powder may cause contamination of your printer. To ensure optimal performance, rerun the preprinted media through an offset presses to remove excess powder.
- Make sure the preprinted media have been adequately dried or cured before wrapping.
- Package the preprinted media in moisture barrier wrap after drying to protect the preprinted media from changes in humidity during shipping and storage. If a plastic shrink wrap is used, avoid crimping or curling damage to edges or corners by making sure the wrap is not too tight. A piece of chipboard on both the top and bottom of the stack will also help you avoid this problem. Locate air exhaust holes at least 3.5 cm (1.5 inch) from any package edge.
- To maintain quality, store preprinted media in an environment of 20°C and 50% humidity.
- Do not use preprinted media which already have been processed on a digital printing system (neither toner nor inkjet technology).
- Monitor (high) acidity levels of media as these can negatively impact the drying of offset inks and coatings.
- When trimming is necessary cut the paper in small stacks (250 sheets or less) to ensure a clean edge.

Work with offset printing service providers that meet the following quality requirements.

- They have experience in producing offset printed media that will be processed in digital printing systems.
- They monitor the quality of their press fountain water. If the applied offset ink carries excess fountain water, fountain water additives or if it has a wrong pH, drying times can be significantly extended.
- They improve oxidative drying of offset inks and also sheet separation by decreasing the stack size of the offset printed stock during storage.
- They do not use anti-oxidant sprays that extend the drying time of offset inks significantly.

Recommended oxidative offset inks and varnishes - Product codes

Epple - ProLaser*

Process inks	
Yellow	100 985
Magenta	100 986
Cyan	100 987
Black	52 745
PANTONE® basic inks	
Pantone Yellow	100 950
Pantone Warm Red	100 951
Pantone Rubine Red	100 952
Pantone Rhodamine Red	100 953
Pantone Purple	100 954
Pantone Reflex Blue	100 955
Pantone Process Blue	100 956
Pantone Green	100 957
Pantone Mixing White	100 958
Pantone Yellow012	100 959
Pantone Orange021	100 960
Pantone Red032	100 961
Pantone Blue072	100 962
Pantone Violet	100 963
Pantone Black	100 964

Sicolor - MultiLaser

Process inks	
Yellow	58004735
Magenta	58004736
Cyan	58004737
Black	58004738
PANTONE® basic inks	
Pantone Yellow	58004750
Pantone Warm Red	58004751
Pantone Rubine Red	58004752
Pantone Rhodamine Red	58004753
Pantone Purple	58004754
Pantone Reflex Blue	58004755
Pantone Process Blue	58004756
Pantone Green	58004757
Pantone Mixing White	58004758
Pantone Yellow012	58004759
Pantone Orange021	58004760
Pantone Red032	58004761
Pantone Blue072	58004762
Pantone Violet	58004763
Pantone Black	58004764

Van Son - LaserPlus (EU codes)

Universal inks	
Universal Black	VS70120
Process inks	
Yellow	VS7010
Magenta	VS7011
Cyan	VS7012
Black	VS7013
PANTONE® inks	
Yellow	VS70100
Warm Red	VS70101
Rubine Red	VS70102
Rhodamine Red	VS70103
Purple	VS70104
Reflex Blue	VS70105
Process Blue	VS70106
Green	VS70107
Transparent White	VS70108
Black	VS70109
Violet	VS70110
Yellow012	VS70112
Orange021	VS70113
Red032	VS70114
Blue072	VS70115

Van Son - LaserPlus (US codes)

Process inks	
Yellow	VS7010
Magenta	VS7011
Cyan	VS7012
Black	VS7013
PANTONE® inks	
Yellow	VS70100
Warm Red	VS70101
Rubine Red	VS70102
Rhodamine Red	VS70103
Purple	VS70104
Reflex Blue	VS70105
Process Blue	VS70106
Green	VS70107
Transparent White	VS70108
Black	VS70109
Violet	VS70110
Opaque White	VS70111

Flint - Novaform E80

Process inks	
Yellow	Novaform 1 E 80
Magenta	Novaform 2 E 80
Cyan	Novaform 4 E 80
Black	Novaform 80
PANTONE® basic inks	
Opaque White	224 026
Dense Black	224 027
Yellow	224 028
Warm Red	224 029
Rubine Red	224 030
Rhodamine Red	224 031
Purple	224 032
Violet	224 033
Reflex Blue	223 564
Process Blue	224 034
Green	224 035
Mixing Black	224 036
Transparent White	224 037
Yellow012	224 038
Orange021	224 039
Red032	223 565
Blue072	224 040

Huber Group - HBL

Process inks	
Yellow	31 PL 0010
Magenta	32 PL 0040
Cyan	33 PL 0090
Black	49 F 5055
PANTONE® inks	
Yellow	31 PL 0010
Warm Red	32 PL 0030
Rubine Red	32 PL 0040
Rhodamine Red	32 PL 0050
Purple	33 PL 0060
Reflex Blue	33 PL 0080
Process Blue	33 PL 0090
Green	34 PL 0095
Violet	33 PL 0070
Yellow012C	31 PL 0012
Orange021C	31 PL 0021
Red032C	32 PL 0032
Blue072C	33 PL 0072
Mixed White	30 IL 1000
Mixed Black	39 PL 5110

* For ordering the Epple ProLaser ink outside Europe, please contact the Epple Head Office in Germany (mrs. Fahrner) +49 821 4603 151

Recommended oxidative offset inks and varnishes - Product codes

Toyo - BioPlus High Solid

Process inks	
Yellow	0010 2380C5
Magenta	0011 2381C5
Cyan	0012 2382C5
Black	0013 2383C5
PANTONE® inks	
Reflex Blue	0016 2384C5
Opaque White	0018 2385C5
Dense Black	0017 2386C5
Yellow	0010 2387C5
Warm Red	0015 2388C5
Rubine Red	0011 2389C5
Rhodamine Red	0015 2390C5
Purple	001A 2391C5
Violet	0016 2392C5
Blue	0012 2393C5
Green	001H 2394C5
Black	0017 2395C5
Medium White	0018 2396C5
Yellow012	0014 2397C5
Orange021	0014 2398C5
Red032	0015 2399C5
Blue072	0016 2400C5

Recommended UV offset inks and varnishes - Product codes

Zeller + Gmelin - UVALUX 20 series

Process inks	
Yellow	2001
Magenta	2002
Cyan	2003
Black	2004
PANTONE® inks	
Opaque White	2005
Dense Black	2006
Yellow	2010
Warm Red	2020
Rubine Red	2030
Rhodamine Red	2040
Purple	2050
Violet	2055
Reflex Blue	2060
Process Blue	2070
Green	2080
Mixing Black	2090
Transparent White	2095
Yellow012	20012
Orange021	20021
Red032	20032
Blue072	20072

Zeller + Gmelin - UVALUX 40 series

Process inks	
Yellow	U40-S1100
Magenta	U40-S1200
Cyan	U40-S1300
Black	U40-S1400
PANTONE® inks	
Yellow	U40-P100
Yellow012	U40-P101
Orange021	U40-P150
Warm Red	U40-P200
Red032	U40-P201
Rubine Red	U40-P202
Rhodamine Red	U40-P203
Purple	U40-P250
Violet	U40-P251
Reflex Blue	U40-P300
Process Blue	U40-P301
Blue072	U40-P302
Green	U40-P350
Black	U40-P400

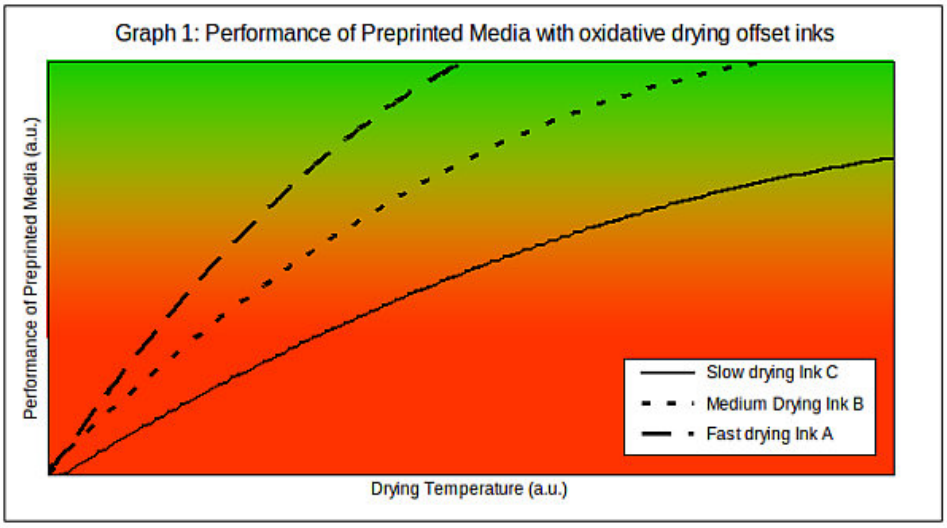
Suncure Laser

Process inks	
Yellow	ULR26
Magenta	ULR27
Cyan	ULR25
Black	ULR46
PANTONE® inks	
Yellow	ULR15
Yellow012	ULR12
Orange021	ULR21
Warm Red	ULR31
Red032	ULR32
Rubine Red	ULR42
Rhodamine Red	ULR55
Purple	ULR51
Violet	ULR52
Reflex Blue	ULR61
Blue072	ULR60
Process Blue	ULR17
Green	ULR71
Black	ULR50
Transparent White	ULR48
Opaque White	ULR84
Intense Black	ULR76
Resistant Reflex Blue	ULR73
Intense Yellow	ULR30
Intense Red	ULR33

Recommended UV offset inks and varnishes - Product codes

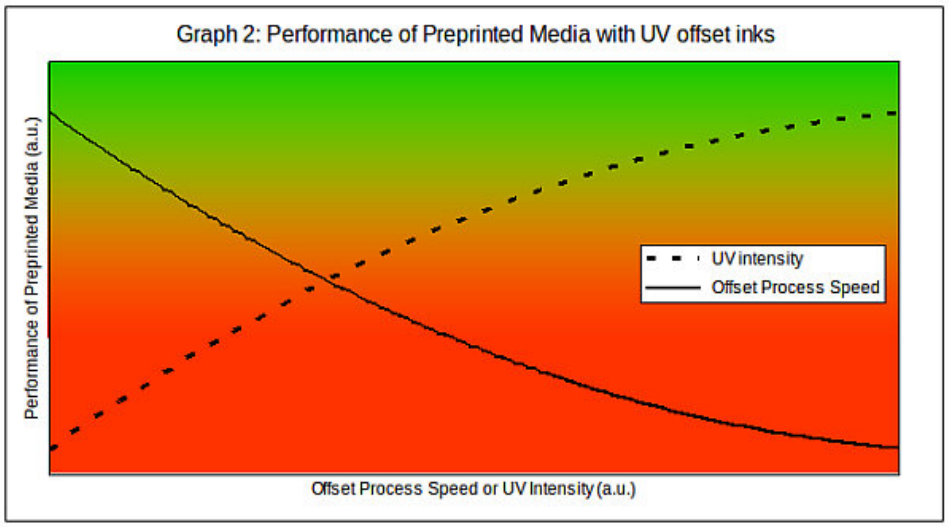
The ideal properties for oxidative drying offset inks

- The oxidative drying offset inks should contain **no migratable components** (0.0 mass% at 110°C). This means that the ink contains **no** low melting polyethylene wax. High melting polyethylene wax (T>133°C) and preferably PTFE-wax can be useful and are allowed. Further, the ink contains **no** mineral oils and **no** non-reacting-vegetable-oils (esters of (almost) saturated fatty acids (e.g. stearic acid) and alcohols (e.g. butanol))
- For oxidative drying offset inks **complete oxidative drying** of all reacting-vegetable-oils should take place. This means that anti-oxidants that prevent oxidative drying should not be used. Furthermore, it is known that temperature has a large influence on the rate of oxidative drying (see Graph 1). Therefore a minimal storage temperature of 20 °C is strongly recommended during oxidative drying of preprinted media.



The ideal properties for UV offset inks

- The UV offset inks should contain **no migratable components** (0.0 mass% at 110°C). This means that the ink contains **no** low melting polyethylene wax. High melting polyethylene wax (T>133°C) and preferably PTFE-wax can be useful and are allowed.
- For UV offset inks **complete UV curing** of all acrylate monomers should take place. This means that the acrylates have to be included in networks that are too big to migrate at 150°C. For good UV curing in the preprinted media guidelines offset UV curing settings (offset process speed and UV intensity) are advised. In general higher intensity UV curing at lower offset printing speeds increases the processability quality of the preprinted media (see graph 2). To ensure good UV intensity it is important to check the output of the UV units in offset presses regularly.



The ideal properties for aqueous dispersion coatings

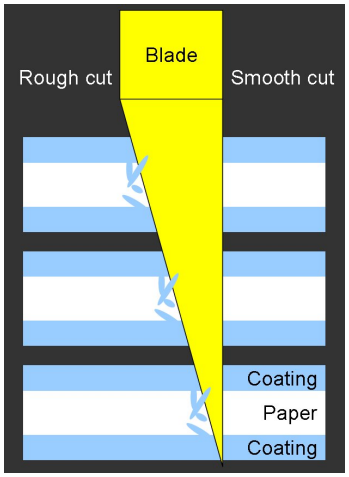
- The aqueous dispersion coatings contain **no transferable components** (0.0 mass% at 110°C). This means that the coating contains **no** low melting polyethylene wax. High melting polyethylene wax (T>133°C) and preferably PTFE-wax can be useful and are allowed.
- For aqueous dispersion coatings **complete evaporation of the water and complete oxidative drying** should take place. Usually, the water evaporates fast, but the remaining coating slows down the oxidative drying process of the underlying oxidative inks. Furthermore the dried dispersion coating does not prevent the migration of components out of the underlying offset inks. Therefore the performance of the offset inks below the coating is dominant for the processability of preprinted media with aqueous dispersion coatings in Océ laser printers.
- Only recommended oxidative offset inks are allowed in combination with ditto dispersion coatings.

Paper cutting and dust

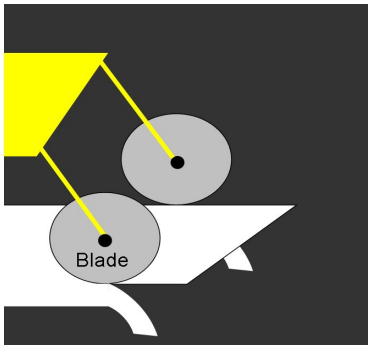
Loose paper dust on (preprinted) paper causes problems in digital printing systems. Dust is most likely created on the sides of sheets during cut and trim operations (see illustration 1 and 2). It can be composed of both fibre and coating materials that have been fragmented from the edges. Once the (preprinted) paper is processed in a digital printing system the dust can contaminate the system, leading to printed artefacts and contaminated sensors. This results in runnability problems.

Paper trimmed by the back of the cutter knife will have clean edges. Paper edges cut by the sloped side of the knife will show dust and paper particles (see illustration 1). The trimming and slitting wheels on finishing equipment can also create a rough cut that can generate excess dust (illustration 2).

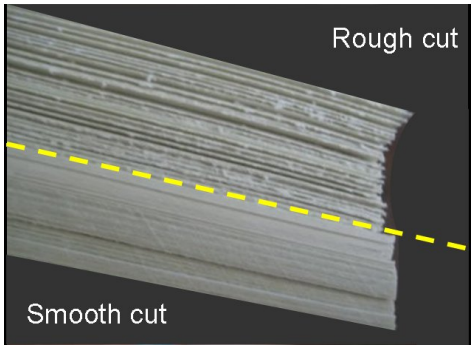
Illustration 3 shows the effect of paper cut by the sloped side of the knife versus paper trimmed by the back of the knife. Finally, an important measure to prevent paper dust on the edges of paper is keeping the cutting knives sharp. Furthermore, keep in mind that different papers have a different impact on the sharpness of cutting knives.



1. Fracture of coating at the sloped edge (or left side) of the blade



2. A rough cut from a dull slitter wheel will generate dust

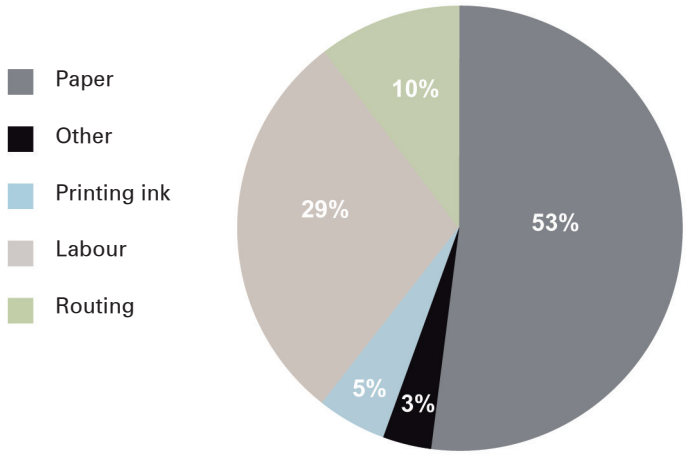


3. Side view of a stack of paper. A rough cut from the sloped edge of a trimmer blade and a smooth cut from the back edge of a trimmer blade.

Cost structure of preprinted media

The price of ink is only a small part of the total costs of preprinted media. The following graph shows that changing to a more expensive offset ink does not have a large influence on the price of the preprinted media. Changing offset inks for an offset printer might also require some additional labour costs.

Cost structure of printed products in 2006



Competitiveness of the
European Graphic Industry
Ernst & Young

Beyond the Ordinary

Printing for Professionals

Creating global leadership in printing

Canon and Océ have joined forces to create the global leader in the printing industries. Our customers can choose from one of the industry's broadest range of products backed by best-in-class service and support organisations. Look to the new Canon-Océ combination for:

- Enterprise printing in the office and corporate printroom
- Large format printing of technical documentation, signage and display graphics
- Production printing for marketing service bureaus and graphic arts
- Business Services for document process outsourcing

For information and services, visit us at:

www.oce.com

© 2011 Océ

Illustrations and specifications do not necessarily apply to products and services offered in each local market. Technical specifications are subject to change without prior notice.

Océ and Océ DirectPress are registered trademarks of Océ Technologies B.V. Canon is a registered trademark of Canon Corporation. All other trademarks are the property of their respective owners.

Edition December 2011

GB