

creating for tomorrow



AFP™-TOP

Premium plate with CleanPrint



Asahi's AFP™-TOP digital flexo plates feature CleanPrint, which allows a kiss touch printing pressure setting with constant repeatability of printing quality during the production run.



Description

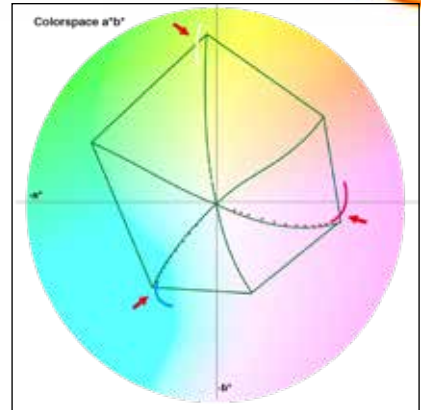
The AFP™-TOP is a premium digital flexo plate, giving the printer a wide colour space with vibrant colour reproductions and soft tonal shades fading out to zero. The AFP™-TOP was developed for the highest quality film, coated paper and label printing application using solvent, water and most UV based inks. CleanPrint was designed to facilitate transferring designs from other printing technologies over to flexograph.

For the process capability of transferring jobs from alternative printing technologies over to flexo, it is essential to be able to match or exceed the printed colour space in the flexographic process. The largest colour space can be reached, if the outside Lab*boundary points (a+, a-, b+, b-) (Image 1) are of increasing nature. This boundary point is usually not the maximum density value which can be printed, but the optimum density (Image 2) to allow the largest possible space. The human eye works on a logarithmic scale and eventually when the density is on the increase, there will be a point of the outer colour space perimeter that values start to decrease (see image 1 again). In this case the human eye will perceive a colour at optimum density to the same density level as a colour with higher optical density. An advantage of the AFP™-TOP CleanPrint plates is that the highlight dot contrast is best by using the optimum density rather than maximum density, and at the same time facilitate the finest lightness shades with tonal gradations fading out to zero.

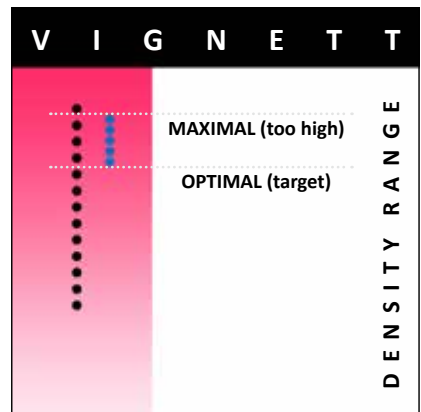
By using the optimum printing density with AFP™-TOP, the largest possible colour space can be achieved. The two images below illustrate a colour space printed with a flexographic Flat-Top-Dot plate (colour structure) and the colour space of the AFP™-TOP illustrated by the line structure and superimposed on the FTD colour space. Whereas the colour spaces of both technologies are similar on the darker L axis (Image 3 cross view), the line grid structure of the AFP™-TOP plate becomes clearly visible from the top view on the lighter L axis (Image 4 top view). This results in a larger total colour space for AFP™-TOP vs. the Flat-Top-Dot technology flexographic print

The product advantages in detail:

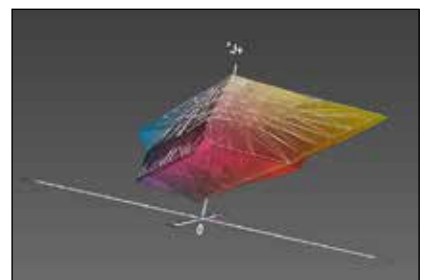
- High resolution image and printing performance
- Finest and soft tonal gradation fading out to zero
- Larger printed colour space due to low dot gain and optimum ink transfer
- CleanPrint enabling a superior ink transfer
- High printing performance with solvent, water and UV based inks on film or coated paper and label substrates
- Reduced ink filling-in particularly important for mid-tone printing, leading to less press cleaning stops
- Kiss touch lighter printing pressure gives an increase in plate life
- Consistent printing quality over the production run due to CleanPrint
- System compatibility with recent screening and microcell technologies



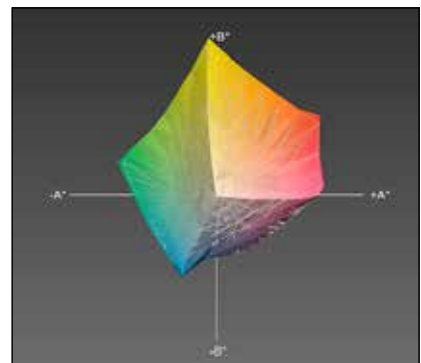
1



2



3 cross section of FTD and Pinning colour space



4 top view of FTD and Pinning colour space

Plate specification and processing recommendation

	AFP™-TOP Digital Plate	
Plate specifications	1,14 mm	1,7 mm
Shore A Hardness (Teclock)	77	69
Applications	Film, Coated Paper and Label	
Ink recommendation	Water based, Solvent based and UV based Inks	
Resolution digital	175 lpi	175 lpi
Tonal range	1-95%	1-95%
Isolated line	80 µm	80 µm
Isolated dot	150 µm	150 µm
Dispro K-factor	5,98	9,89
Plate colour	yellow	yellow

① The mJ intensity is measured by ORC. To calculate the equivalent exposure time in sec. The following formula can be used:

$$\frac{\text{ORC target exposure mJ}}{\text{measured light output mW/cm}^2} = \text{sec}$$

② The mentioned plate making conditions are particular to the Asahi Photoproducts technical centre equipment and cannot be transferred. The values should be used with caution and understood to be a best practice start-up values for testing the plate making condition as explained in the Asahi Photoproducts AFP™-TOP training manual.

③ In case the light intensity is not measured with ORC, but with Kuehnast, the following conversion can be used:

$$\text{UVA: } \frac{\text{Kuehnast mW/cm}^2 \text{ measurement}}{1,43} - 0,63 = \text{ORC mW/cm}^2$$

$$\text{UVC: } \frac{\text{Kuehnast mW/cm}^2 \text{ measurement}}{2,1} - 1,1 = \text{ORC mW/cm}^2$$

	AFP™-TOP Digital Plate	
Plate processing parameters ① ② ③	1,14 mm	1,7 mm
Plate bump-up at 133 lpi (54 V/cm)	4%	4%
Plate bump-up at 150 lpi (60 V/cm)	4,5%	4,5%
Plate bump-up at 175 lpi (70 V/cm)	5,5%	5,5%
Back flash	550 mJ	750 mJ
Relief depth (test target)	0,6 mm	0,6 mm
Laser imaging	3,4 J	3,4 J
Front exposure	4000 mJ	4000 mJ
Wash-out speed/minute	160 mm	150 mm
UVA post exposure	1000 mJ	1000 mJ
UVC light finishing (max.)	2000 mJ	2000 mJ

Full HD Setting 1,14; 1,7														
	Plate Back Exposure	UV Diode				Laser Power	Screen set/ Bump-up HD screen/ Bump-up Circular FTD					Pixel Boost		
	mJ (0,5 mm P)	RPM	Exp. Sec	Dot Fail	UV mW	Mask mJ	124 dpi screen	136 dpi screen	149 dpi screen	174 dpi screen	198 dpi screen	WSI	MG45	MG34
Customer A		5	840		26				C31TPH SD07/0,8/3,0			230	240	
Customer B	700/1,14	6	780	30	25	3,8		C19TPH SD10/0,6/1,9; C25TPH SD10; C31TPH SD10	C19TPH SD07/0,6/C 1,9; C25TPH SD7; C31TPH SD4	C16TPH SC07/1/C 2,3; C19TPH SD07/0,6/2,2; C25 SD07	C19D04/0,9/C 2; C25TPH SD04/0,9; C31TPH SD04/0,9/C 2	230	240	

AFP™-TOP Summary

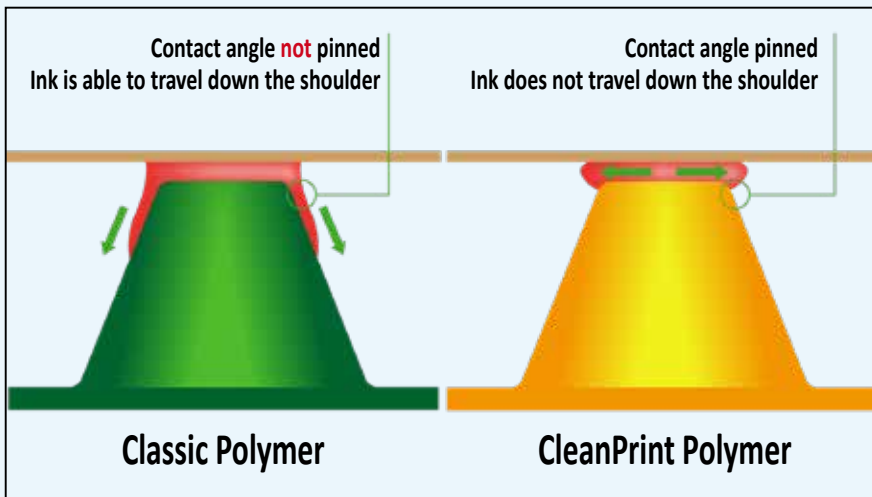
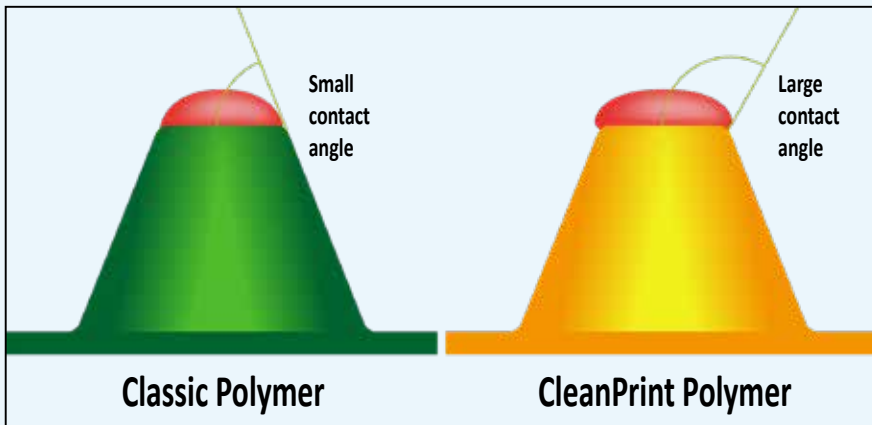
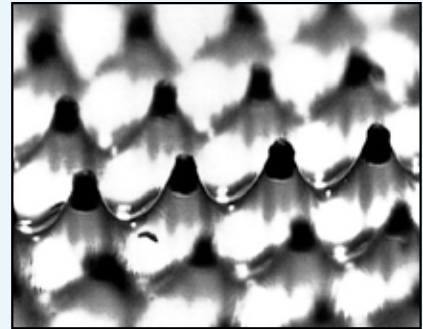
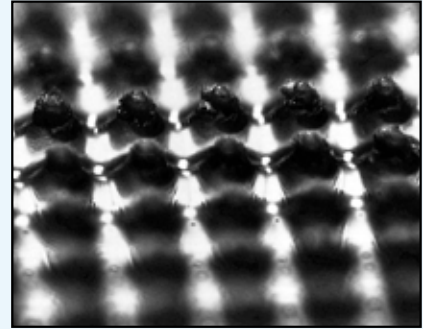
- Hard type hardness premium photopolymer plate allowing high screening resolution
- Smooth tonal transitions with highlight dots fading down to zero
- Finest transition allow job transfer from other printing technologies over to flexo
- Plate compatibility with solvent, water and most UV based inks
- Capability to improve printers profitability thanks to less plate press cleaning stops



CleanPrint and its advantages

The features of CleanPrint

Asahi's AFP™-TOP plates feature CleanPrint, which is designed to facilitate kiss-touch printing pressure. Lighter printing impression produces constant repeatability of printing quality during the production run. This characteristic is achieved by engineered photopolymer chemistry, reducing the surface energy of the printing plate. CleanPrint has the beneficial effect of reducing the ink filling-in at the mid-tone area during the printing run leading to fewer cleaning intervals and downtime for the printer. The graphical printing performance, and the improvement of the printers profitability was at the focus of Asahi's CleanPrint plate development. The AFP™-TOP plate technology improves press uptime during the printing process. That way, CleanPrint becomes a synonym for performance and profitability in one. The AFP™-TOP plates are a product solution that can easily fit into existing customer environments without the need for additional machine investment. This flexibility enables the customer to react to changing market demands and trends whilst ensuring that the business efficiency improvement is sustainable. Furthermore AFP™-TOP can be used with the high definition screening and microcell patterning technologies.



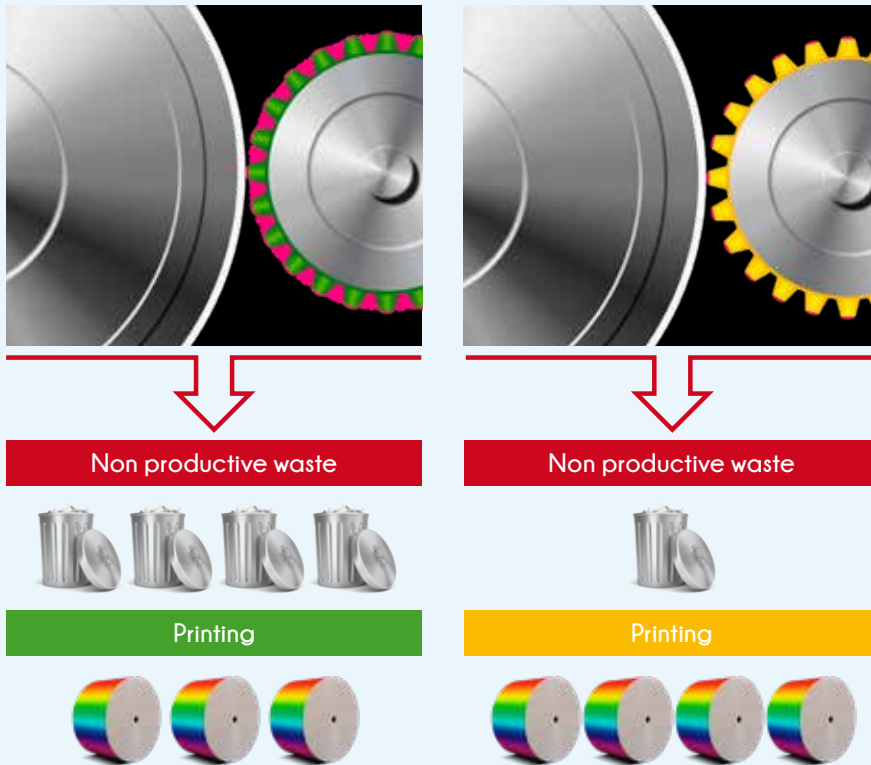
The CleanPrint plate features a reduced surface energy and thus enables a better ink transfer to the substrate



CleanPrint and its advantages

Press profitability based on printer cleaning stop reduction

CleanPrint plates have been specifically engineered to transfer all remaining ink to the printed substrate. This is due to the plate's lower surface energy. CleanPrint plates do not need to be cleaned as often as the conventional digital solvent plate. The reduction of press cleaning stops creates a significant profitability improvement to the printer as explained in the calculation example below.



Summary of CleanPrint

- CleanPrint allows for a low printing pressure, the plates last longer in the printing press
- Dot gain is reduced because of less pressure and CleanPrint
- Improves the printer profitability
- Is working well with fixed colour palette solution as it requires constant printing result
- New way plate surface energy reduction by plate solution
- Can fit easily into repro house existing digital work flow

Summary of the OEE Advantage

	Printer	Sample case: Film printer with CI press and NC solvent based inks. Anilox volume: 3,5 cm ³ /m ² at 470 l/cm. Press speed 180 m/min.	Insert your parameters:
	Printers shifts	3/24 hours	
	Working days per year	240 days	
	Machine cost per hour	350 Euro ^①	
	Total operating cost	€ 2.016.000	
	OEE AFP™-TOP plate	58%	
	Machine uptime cost	€ 1.169.280	
	Non production cost	€ 846.720	
	OEE Solvent plate	49%	
	Machine uptime cost	€ 987.840	
	Non production cost	€ 1.028.160	
OEE Advantage AFP™-TOP vs. solvent: 18% = € 181.440			

^① labour cost, machine depreciation, overheads such as electricity, water and gas, storage, machine space etc.

^② OEE data may vary from customer to customer. This example is a sample calculation experienced at a customer.



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