

PICOFILM / PICOPRINT

Printing and processing information

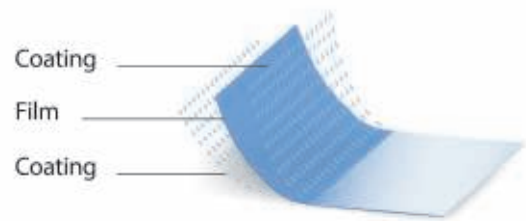
Our PICOFILM and PICOPRINT qualities comprise a comprehensive range of high-quality polyester films with special coatings for laser printing or digital printing systems with dry toner. Our antistatic coatings give the heat-stable films the best running characteristics in printing as well as special properties and resistance.

All grades are particularly hard-wearing, tear-resistant, waterproof, weather-resistant and – depending on the thickness or coating – have varying degrees of resistance to temperature and chemicals. Pre-printing in offset and flexographic printing is also possible as well as further processing such as punching, perforating and cutting.

PICOFILM and PICOPRINT grades are PVC-free and recyclable and suitable for heavy-duty and outdoor applications such as hang tags, loop labels, plug-in labels, signage, price lists, instruction manuals, menus and much more.

Available in thicknesses from 125–350 µm, as white film with matt coating or as transparent film with semi-transparent coating:

PICOFILM P-100 M2 to P-350 M2
 PICOPRINT P-125 FG2 to P-200 FG2
 PICOFILM P-145 TM2



Product name:

PICOFILM / PICOPRINT	= range designation
P	= polyester
100–350	= total thickness of the coated film in µm
M	= white film with matt coating and highest durability
FG	= white film with matt coating and good UV offset printability
TM	= transparent film with matt white, semi-transparent coating
1	= one-sided coating
2	= coating on both sides

General information on printing

Although the PICOFILM and PICOPRINT grades are designed for laser printing with dry toner due to their special coatings, they may also be pre-printed using conventional printing processes such as offset or flexographic printing.

Please refer to our table in the appendix 'Suitability of printing technologies' to find out which other printing processes the respective grades are suitable for. For processing, we generally recommend carrying out tests in advance in all production processes and conducting corresponding application tests.

Conventional printing processes

For pre-printing, it is generally important to note the following:

- Avoid high ink application, the ink layer thickness should already be reduced in the pre-printing stage with under-colour reduction (UCR/GCR).
- Areas that are subsequently overprinted in laser printing should be pre-printed with an ink density of no more than 30%.
- The pre-printed ink must be fully cured prior to laser printing.
- Laser toner is fixed at temperatures of up to 220°C, the inks in the preprint must also provide similar heat stability.

FLEXO PRINTING

All grades are suitable for pre-printing with water-based or UV-reactive flexographic inks. Ask your ink supplier for a suitable heat-stable ink series for pre-printing in laser printing.

OFFSET PRINTING (web/sheet offset)

All grades can be printed in conventional sheetfed offset with mineral oil-free and predominantly oxidative drying inks. Ask your ink supplier for a corresponding heat-stable ink series for pre-printing in laser printing.

Due to the non-absorbent surface of the film and the increased dead weight of the film material, the drying process may be prolonged and ink may be deposited on the reverse side. The printing stack in the sheet delivery should therefore be kept low and no additives that delay drying, such as roller fresheners, should be used. Likewise, no loose printing powder should be used, as this contaminates the laser printer in the reprint.

The pH value of the fountain solution should not be below 5, as an overly acidic fountain solution may delay ink drying. Alcohol additives up to a maximum of 10% are permissible.

Since the film coating absorbs water only to a very limited extent, the ink-water balance should be optimised for minimum water flow to avoid overemulsification of the ink. For layouts with low ink absorption, it is advisable to print ink absorption bars outside the layout for regular colour refreshing.

Oxidative drying ink series tend to form odours, contact yellowing and ghosting due to outgassing, so the print stacks should always be kept very low with a maximum of 15 cm. As soon as the ink film is no longer deposited and is hard as nails, additional ventilation can be achieved by fanning out the sheets, which positively promotes gasification and residual drying.

Only UV-reactive offset inks are suitable for web printing of film material, as these have the benefits of immediate cross-linking.

It should be noted that PICOFILM grades with the M coating are not suitable for printing with UV-reactive inks, but PICOPRINT grades with the FG coating function perfectly for this purpose.

Digital printing processes

DRY TONER-BASED PRINTING SYSTEMS (laser/LED printers)

Owing to the large number of dry toner-based digital printing systems in different performance classes, it is not possible to make a generally valid processing recommendation. As a general rule, these printing systems can be divided into two categories:

- **Office printers, multifunction printers**

These models offer only a limited choice of pre-set media types, and neither fusing temperature nor toner transfer voltage can be manually adjusted.

As a rule, copier papers with a maximum weight of 220 g/m² and polyester films up to 125 µm thick can be processed. From a film thickness of 150 µm, it must be checked in advance on these printers whether the material complies with the device specifications.

Test either the media type with the highest grammage (heavy weight) or the setting for film (overhead transparency) in the printer settings.

The material is usually fed in via friction rollers, so if there are feeding problems when printing from the tray, you should choose the manual feed tray.

- **Production print press, industrial printers, production printing machines**

With these professional printing systems, the use of thicker substrates is possible, while some media profiles can be created or even downloaded from the media database.

The toner transfer voltage and fusing temperature can be individually adjusted to the material, polyester films up to 350 µm and beyond can be printed without any problems.

Ideally, the substrate is fed in via vacuum-guided conveyor belts, which enables trouble-free processing from all material trays.

Immediately after laser printing, polyester films show an increased static charge between the sheets – they can hardly be fanned out or jogged. Experience has shown that this charge abates by itself after some time. An increase in ambient humidity accelerates this process. We therefore recommend leaving the printed stack for a few hours under air-conditioned conditions (ideal room climate $20 \pm 5^\circ\text{C}$ and $50 \pm 10\%$ relative humidity) before further processing and only then fanning and jogging the sheets.

We deliberately give our matt film grades in 100 to 200 μm a slightly rougher surface to optimise the paper feed in office printers and prevent a glass plate effect. The sheets stick together less and the surface becomes more grippy for the friction rollers. Before printing fan out the stack again to bring air between the sheets, this reduces the risk of multiple feeds and paper jams in office printers.

LIQUID TONER-BASED PRINTING SYSTEMS (HP Indigo)

Ask our Customer Service for suitable grades for HP Indigo printing.

INKJET PRINTING

Our polyester films are not suitable for water-based inkjet printing with pigment inks or dye inks, nor for printing with solvent inks.

UV inkjet printing works perfectly, printing with latex inks should be tested in advance.

Please ask at Customer Service for our special range of films for water-based inkjet printing.

THERMAL TRANSFER PRINTING (flat-head/near-edge printers)

For thermal transfer printing, we have special grades with a higher surface smoothness. This guarantees a sharp-edged transfer of the ribbon, good ink adhesion and better barcode readability.

Owing to the large number of printer manufacturers and printer models with print heads in different resolutions (200/300/600 dpi) and various quality levels of ink ribbons, we recommend extensive testing in advance with the relevant components. Basically, resin-wax or pure resin ribbons are suitable for foil printing.

With a higher film thickness from 185 μm , we recommend the use of near-edge printers. With flat-head printers, the increased material rigidity can cause the print head to skew and reduce the contact pressure, which can have a negative effect on ribbon transfer.

General information on further processing

Compared to other types of film, polyester films are harder, stiffer and more heat-stable in their mechanical properties. They can be processed well under consideration of the following instructions:

CUTTING

The high tear strength is only retained if the cut edge is neat and smooth. Knives and cutting tools should be ground sharp so that the cutting edges do not become squeezed and frayed. Such irregularities lead to defined breaking points that tear easily.

Ideally, films from the roll are cut from both sides with circular knives (shear cut) to avoid welding and sticking of the sheets and to obtain a burr-free cut.

When cutting sheets on a guillotine cutter (guillotine cut), separating cuts behind the cutter should always be made with a clean counter cut. Jog the stack well and smooth it out to avoid air pockets. The stack height should not be higher than 10 cm and the pressure of the pressing bar should be as low as possible.

For universal use, the blade angle is 23° or 24° ; for frequent cutting of foils, a blade angle of 21° and correspondingly hardened steel blades have proven their worth. Please contact your supplier for cutting tools.

FOLDING

Polyester films can be folded in any material direction, they have a high folding number and tear resistance. Due to the high restoring forces, polyester films are not suitable for cross folding. For material thicknesses of 200 µm and more, it is recommended to groove the fold in advance.

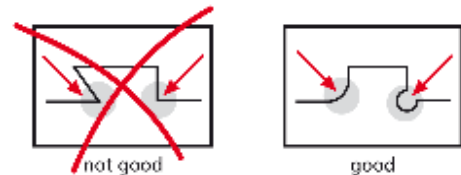
CREASING / SCORING

To prevent the creasing groove from being squeezed or damaged, the creasing tools must not have any sharp edges and creasing should generally be carried out with a slightly wider and deeper creasing groove to suit the respective material thickness.

Instead of creasing, polyester films with a thickness of 200 µm or more can also be lightly scored, leaving 2 mm of intact webs at the edge of the sheet and at cross lines to prevent the film from tearing at the edge of the sheet or at the cross points. The creasing groove or scored side should be on the outside when folding.

PUNCHING

All edges should be rounded during punching, as sharp edges or notches represent defined breaking points at which the material tears easy. Carbide punching knives are recommended (e.g., made from chrome-alloyed or high-frequency welded steel).

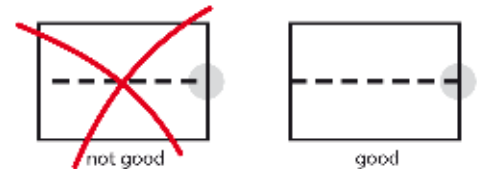


STAMPING

PICOFILM is ideally suitable for hot-foil stamping. For relief embossing, we recommend carrying out tests in advance, as the polyester film can only be deformed to a limited extent.

PERFORATING

As polyester films have increased tear strength, the first cut must always begin at the edge of the sheet.



DRILLING

It is essential to control the drilling stroke speed and drill speed during drilling. The drill must not overheat and should be well lubricated, for instance by pulse lubrication with wax paper. To prevent the drill from overheating and hence melting of the material, it is necessary to work with low stacks, high stroke speed and a low drill speed. Special Teflon-coated drills are recommended and should be sharpened regularly by professionals.

GLUING & BINDING

For perfect binding of books, we recommend hotmelt gluing systems with EVA or PUR hotmelt glue.

For ring bindings or wire comb bindings, we recommend round hole punches in each case so that the material does not tear.

STORAGE

Storage should be flat and, if possible, in the original packaging. Please repack residual sheets airtight.

The ideal room climate for equipment and storage is $20 \pm 5^\circ\text{C}$ and $50 \pm 10\%$ relative humidity. Store the sheets unopened for least 24 hours after delivery for acclimatisation in the printer room and do not open the packaging until shortly before printing. If the room climate is very dry, the sheets tend to become statically charged. We therefore recommend that you do not unpack the sheets until shortly before printing.

DISPOSAL & RECYCLING

You can find detailed information on this in our relevant safety instructions, which our Customer Service will be pleased to send you. Enquiries by email to: CustomerService.Dueren@sihl.com

PICOFILM / PICOPRINT

Suitability of printing technologies

Quality	g/m ²	µm	Coating	Film	Thermal transfer printing	Dot Matrix printer	Inkjet waterbased inks dye/pigment	Inkjet with UV-inks	Office & Multifunction Printer Dry Toner - Laser - LED	Production Print Press Dry Toner - Laser - LED	HP Indigo	Conventional offset / litho printing	UV-offset / litho printing	Flexo printing (UV & waterbased)	
7829	PICOFILM P-100 M2	120	105	matt	PET	o	T	o	✓	✓	✓	o	✓*	o	✓
7831	PICOFILM P-125 M2	155	130	matt	PET	o	T	o	✓	✓	✓	o	✓*	o	✓
7842	PICOFILM P-140 M1	180	135	one-side matt smooth	PET	✓	T	o	✓	T	T	o	✓*	o	✓
7845	PICOFILM P-150 M2	190	155	matt	PET	o	T	o	✓	✓	✓	o	✓*	o	✓
7832	PICOFILM P-150 M2 (G)	185	145	matt smooth	PET	✓	T	o	✓	✓	✓	o	✓*	o	✓
7839	PICOFILM P-185 M1	250	180	one-side matt smooth	PET	✓	T	o	✓	T	T	o	✓*	o	✓
7848	PICOFILM P-200 M2	260	200	matt	PET	o	T	o	✓	Δ	✓	o	✓*	o	✓
7834	PICOFILM P-275 M2	370	260	matt smooth	PET	✓	T	o	✓	Δ	✓	o	✓*	o	✓
7847	PICOFILM P-350 M2	490	350	matt smooth	PET	✓	T	o	✓	Δ	✓	o	✓*	o	✓
7895	PICOPRINT P-125 FG2	150	125	matt	PET	o	T	o	✓	✓	✓	o	✓*	✓	✓
7897	PICOPRINT P-150 FG2	185	150	matt	PET	o	T	o	✓	Δ	✓	o	✓*	✓	✓
7896	PICOPRINT P-200 FG2	250	200	matt	PET	o	T	o	✓	Δ	✓	o	✓*	✓	✓
7830	PICOFILM P-145 TM2	185	140	matt transparent	PET	T	T	o	✓	✓	✓	o	T	T	✓
7815	PICOFILM O-180 IM1	130	180	matt	PP	T	T	✓	✓	o	o	o	o	o	T
7816	PICOFILM V-350 IM1	480	350	matt	PVC	T	T	✓	✓	o	o	o	o	o	T

- ✓ proven · suitable
- ✓* suitable with inks drying by oxidation
- Δ check printer specifications
- T to be tested in advance
- o not suitable

The values stated above are only for orientation. Before using our print media please check its compatibility for your printing system and the application. Please consider our recommendation for printing and processing.

PICOFILM / PICOPRINT

Product properties and resistances

Quality	g/m ²	µm	Coating	Film	Opacity	Initial tear resistance	Stiffness	Foldability	Oil / grease resistance	Resistance against disinfectant	Chemical resistance	Water resistance	Ageing resistance	Recyclable	
7829	PICOFILM P-100 M2	120	105	matt	PET	++	+	+	+++	+++	+++	+++	+++	✓	
7831	PICOFILM P-125 M2	155	130	matt	PET	++	++	+	+++	+++	+++	+++	+++	✓	
7842	PICOFILM P-140 M1	180	135	one-side matt smooth	PET	+++	++	++	+++	+++	+++	+++	+++	✓	
7845	PICOFILM P-150 M2	190	155	matt	PET	+++	++	++	+++	+++	+++	+++	+++	✓	
7832	PICOFILM P-150 M2 (G)	185	145	matt smooth	PET	+++	++	++	+++	+++	+++	+++	+++	✓	
7839	PICOFILM P-185 M1	250	180	one-side matt smooth	PET	+++	++	++	++	+++	+++	+++	+++	✓	
7848	PICOFILM P-200 M2	260	200	matt	PET	+++	++	++	++	+++	+++	+++	+++	✓	
7834	PICOFILM P-275 M2	370	260	matt smooth	PET	+++	+++	+++	+	+++	+++	+++	+++	✓	
7847	PICOFILM P-350 M2	490	350	matt smooth	PET	+++	+++	+++	—	+++	+++	+++	+++	✓	
7895	PICOPRINT P-125 FG2	150	125	matt	PET	++	++	+	+++	+++	+	++	+++	+++	✓
7897	PICOPRINT P-150 FG2	185	150	matt	PET	+++	++	++	+++	+++	+	++	+++	+++	✓
7896	PICOPRINT P-200 FG2	250	200	matt	PET	+++	+++	+++	++	+++	+	++	+++	+++	✓
7830	PICOFILM P-145 TM2	185	140	matt transparent	PET	+	+++	++	+	++	++	++	++	✓	
7815	PICOFILM O-180 IM1	130	180	matt	PP	+++	+++	+	+	++	+	+	++	—	
7816	PICOFILM V-350 IM1	480	350	matt	PVC	+++	+++	++	+	++	+	+	++	—	

+ standard, good
 ++ high, better
 +++ very high, very good

✓ applicable
 — not applicable

The values stated above are only for orientation. Before using our print media please check its compatibility for your printing system and the application. Please consider our recommendation for printing and processing.