

# Technical Acceptance Test for Flexographic Printing Presses



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**Sächsisches Institut  
für die Druckindustrie**



The technical acceptance test recommendations build  
the foundation for an objective assessment for:

- Purchasing a new printing press
- Comparing the performance of different presses
- Evaluating or acquiring a used printing press
- Press repairs and troubleshooting
- Scheduled maintenance and servicing

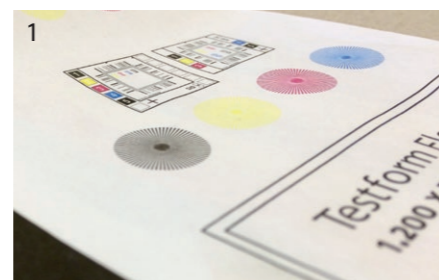
# Technical Acceptance Test for Flexographic Printing Presses

## Initial Operation and Acceptance Test

The acceptance test of a new printing press occurs after the press installation and the first successful printing tests. Besides a competent press operator, a representative from the press manufacturer should be present during the acceptance test. Similarly, it is also possible to conduct an acceptance test for used presses.

In order to have comparable results, it is imperative to have defined conditions and test criteria for the acceptance test. Imprecise press settings or insufficient use of printing aids needs to be avoided in order to completely rule out inconsistencies in the process.

SID has therefore developed recommendations for flexographic printing presses which form the basis of this objective technical acceptance test.



- 1 Details of the printing test form
- 2 Ink colour guide
- 3 Paper roll
- 4 Tonal value measurement on a flexographic printing cliché
- 5 Printing test form
- 6 LUCHS IV register measurement
- 7 Banding graph

## Acceptance Test Preparations, Conditions and Test Parameters

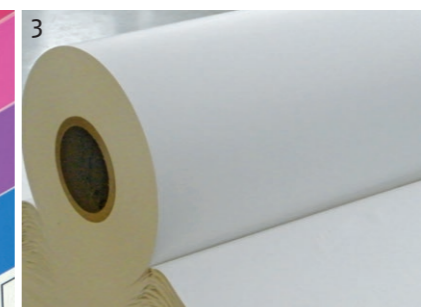
Category	Parameter	Description	Measurement Method
Preparations/ Prerequisites	Print order	e.g. 8 printing units: First test: PU1 Y, PU2 M, PU3 C, PU4 K, PU8 K	
		Second test: PU4 K, PU5 Y, PU6 M, PU7 C, PU8 K	
	Substrate	Plastic film, pretreatment necessary	Test pen / test ink (on corona pretreatment)
		Paper, board, at least machine finished, ideally coated	
	Printing form	Printing test form for print quality with register, banding test form, min. 40 l/cm, linearly imaged test forms, no profiles, already used clichés are not to be mounted again	
	Mounting tape	Medium-hard/medium-soft, 0.45 mm - 0.55 mm	
	Test printing speed	70% of the maximum production printing speed	
	Anilox roller	5x the resolution of the printing form, approx. 5 ml/m <sup>2</sup>	
	Sample collection	100 successive segments for register measurement and for print quality assessment, 10 samples for the banding measurement	
Conditions	Colour coordinates	$\Delta E \leq 5$ , compared to the relevant CIE Lab table	Spectral densitometer
	Tonal value increase	TVI in 40% patch: $\leq 30\%$ , TVI in 80% patch: $\leq 15\%$	Spectral densitometer
	Printing pressure	Printing pressure control element „Kombi“ KE 1.0: 0.5-0.75 visible	Visual assessment
	LUCHS IV register assessment	LUCHS IV element readability needs to be suitable for measurement	LUCHS IV Register Measuring System
Test parameters / Target values	LUCHS IV register assessment	Maximum absolute register shift: 100 $\mu\text{m}$ (diagonal)	LUCHS IV Register Measuring System
		Maximum range in 100 consecutive segments: 100 $\mu\text{m}$ (over a maximum of 5 printing units)	
	Homogeneity (lengthwise/crosswise)	$\leq 10\%$	Spectral densitometer
	Line deformation	(Spreading of the 80 $\mu\text{m}$ line) $\leq 20\%$	Microscope
	Tonal value spread	In the 40% patch $\leq 5\%$	Spectral densitometer
	Banding formation	$\Delta E \leq 1.5$	Spectral densitometer Scanner method
		$\Delta L \leq 0.5$	

## Printing Ink



The acceptance test recommendations have been designed for use with all printing ink types used in flexographic printing. Solvent-based, UV-curable and water-based printing inks can be used for the assessment of the printing press. When printing the printing test form, only the process inks yellow, magenta, cyan and black can be used. The viscosity of the inks in the press system is aligned with the normal values found in practice. It is recommended to use an automatic viscosity control system to assure stable printing properties. Due to the limited amount of inks used for the test form and the typical higher amount of printing units in flexo printing presses, the acceptance test can be carried out in multiple press runs.

## Substrate



It is recommended to use typical production substrates, e.g. coated or machine finished paper, board with a white surface or white plastic film, for the acceptance test of a printing press. The width of the material should not be below 80% of the maximum printing width. For printing on film substrates (e.g. LDPE, white plastic film), it is especially important that the printing side is pretreated shortly before use. When using paper/board, material shrinkage is to be taken into account. Measurement errors, or rather register errors, can be avoided by preshrinking the material, for example.

## Printing Form Properties

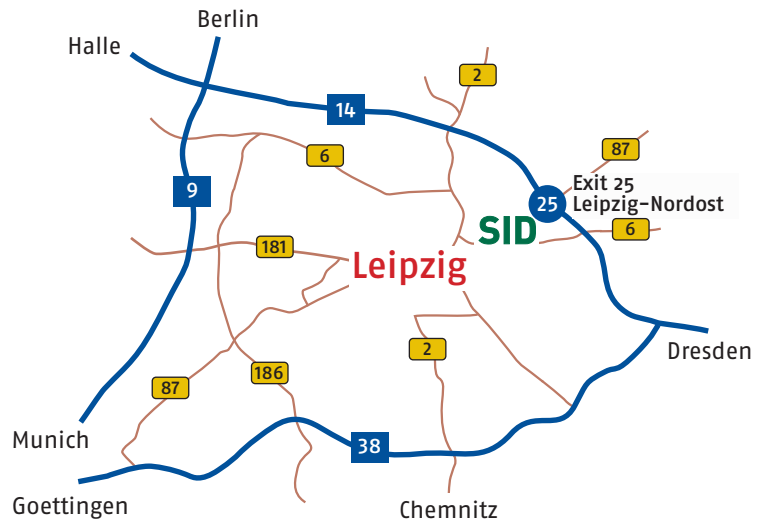


When imaging the printing form, it is very important for the standardised acceptance test process to have linearised clichés (photopolymer or elastomer). Thin layered printing forms are recommended (0.76 - 1.14 mm), although conventional clichés can also be used ( $\leq 3$  mm). The degree of distortion can be applied using typical press characteristic values. It is also necessary that each printing form has a different screening angle. The banding test form must have a 0° angle and have a 70% tonal value.

## Mounting Tape

Absolute care needs to be taken when applying the adhesive tape and the flexographic printing plate. Ideally, an optical mounting control system should be used.





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