

Pad Printing Clichés

Manufacturing and Durability

Pad
2012
15. Aug

The interaction of the single pad printing components like machine, printing speed, cliché, pad, ink, and printing conditions must be precisely tailored in order to deliver a perfect result.

Choosing the right cliché is one of the most decisive factors. The choice may depend on the differing durability and manufacturing of the available cliché types:

1. Photopolymer (Plastic) Cliché

Being available as either water- or alcohol-washable cliché, both types have the clear advantage of independence because the user can manufacture them by himself.

Needed is a repro film reversed, positive, and matt, with a optical density higher than log 3.5 and a transparency less then log 0.06. The resolution should be at least 1.200 x 3.600 dpi.

By using different screen films for the second exposure it is possible to change the etching depth of the cliché.

The most common film for the production of the photopolymer cliché is the 120 lines/cm film with 85% tonal value.

Most important to know:

The fewer lines/cm and/or the higher the tonal value, the deeper the etching depth of the plate, or vice versa:

The more lines/cm and/or the lower the tonal value, the flatter is the etching depth of the cliché.

The lifetime of these clichés (careful handling provided) is made for medium print jobs as long as the cliché is completely cured (<30min at 100°C). Insufficient curing will reduce the lifetime of these clichés significantly.



2. Metal Sheet Cliché

Metal sheet clichés are hardened steel plates with a thickness of about 0.5 mm. They can be produced by etching with Iron Chloride (FeCl₃) or laser engraving (without repro film). The lifetime of these clichés (careful handling provided) is made for medium print jobs. Please see #3 for disadvantages.



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3. Steel Cliché / flat and cylindrical

Analogous to metal sheet clichés, steel clichés can be made by etching or laser engraving. The lifetime of these clichés (careful handling provided) is made for large print jobs.

Disadvantages:

Etched steel cliché:

- For the production of an etched cliché it is still necessary to use a reversed, positive, glossy repro film, with an optical density higher than log 3.5 and a transparency less than log 0.06. The ideal resolution is at least 1.200 x 3.600 dpi.
- For 4 colour process prints, a maximum of 80 lines/cm is possible
- The disposal of the used chemicals is complex and expensive
- Due to the complicated manufacturing process most users are not able to make this type of cliché by themselves and therefore rely on cliché manufacturers

Laser engraved cliché:

- Halftoning is yet quite difficult with this application, and it does not reach the quality of an etched cliché
- Compared to metal clichés, the purchase of a laser is still very expensive so that for most users it is simply not efficient

4. Ceramic Cliché/ flat and cylindrical

This cliché type can only be produced with laser engraving. The main advantage is the long lifetime, but compared to steel clichés they are much more sensitive to damage. It is an absolute must to treat them very carefully.



Summary

Photopolymer clichés are most suitable for small quantity print jobs, test prints, pre-series prints or quick-service prints. A big advantage is the suitability for self manufacturing. Thin steel plates deliver good printing results for medium print runs, while steel plates are being used for large print runs and high quality standards. Ceramic clichés produce very good print quality and are predestined for very large and repeating print runs.