What Are Offset Printing Plates?

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In brief

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Even though the world of commercial printing has moved into digital printing, most printing businesses still prefer tried and tested offset printing. Offset printing has been a standard for most commercial printers for centuries. Therefore, even as digital printing improves, experienced printers still believe offset printing that uses metal plates still has the highest possible quality.

What is Offset Printers?

The principal functioning of offset printers is the same, be it single or multi-color, web-fed or sheet-fed, and imported or domestically manufactured. Typically, the printing press makes an impression with every cylinder rotation. It makes impressions by transferring or offsetting inked images from the plate to the rubber blanket and then the printing surface. Apart from ink and the dampening systems, offset presses have three printing cylinders: the blanket, plate, and impression.

Apart from the printing press, offset printing plates are an essential part of offset printing. This includes the metal or material made and the chemical processes it undergoes before being mounted on the plate cylinder. These two factors significantly affect the quality of the end product.

Offset printing plates should seamlessly facilitate offset printing, which involves the transfer of images to paper, cardboard, and other substrates. Images are offset to printing plates using photochemical or photomechanical processes in a prepress stage. Ideally, one plate is manufactured for each color during the print job.

Printing plates can be made from different materials, such as plastic, rubber, metal, and more. Metal offset printing plates are expensive but long-lasting and print with greater accuracy. They can also be used in printing large print runs. In addition, most offset printing plates are fragile, usually 0.3mm, which makes them easy to mount on cylinder plates.

Over time, aluminum has remained the most preferred metal for manufacturing metal offset printing plates. Zinc and steel are alternative metals. Printing plates might be mono-metal (one aluminum metal), multi-metal, or paper construction.

Printing plates get attached to plate cylinders on the printing press during printing, and water and ink are applied to printing rollers. The inked image is on the printing plate offsets to an intermediary printer, then to the printing plate. In the plate, ink is attached to the imaged areas before being transferred to the paper or substrate.

Prepress Offset Plating Decisions

Printing projects that require black ink use only one printing plate. On the other hand, printing jobs that require black and red ink uses two plates. That said, printing jobs requiring more colors use more plates, increasing printing costs.

This increasingly becomes complicated when the printing task has multiple color photos. Offset printing separates colored photos into four colors, black, yellow, magenta, and cyan. Since four colors are used, the printing process requires four different plates to run simultaneously on the printing press.

CMYK color options significantly differ from the Red, Green, and Blue (RGB) color models on computer screens. Experienced offset printers often examine and adjust digital files for each print job to reduce the number of printing plates required for printing and conversion of colored images. More than four printing plates are used in some situations, such as where a logo should appear.

Types of Offset Printing Plates

Offset printing uses three main types of printing plates. They include:

Gravure plates

These plates are used for producing exceptionally high-quality printouts. They recreate images and other print graphic materials that are very close to reality. However, to use these plates in offset printing:

- You should use specialized ink
- It requires adjustments to achieve great final impressions

Gravure plates typically produce newspapers and products requiring maximum attention to detail.

Lithographic plates

Lithographic plates are specifically used to facilitate printing processes with areas that shouldn't come into contact with ink. The principle behind lithographic plates is that water and oil don't mix. The plates use this advantage to create image and non-image areas. Image areas are made oil receptive and water repellant, while non-image areas are made water receptive and oil repellant.

Therefore, when the plate comes into contact with the dampening rollers, the non-image areas accept the water-based solution and become wet, while the image areas take the oily ink.

Digital plates

Digital offset printing plates are new and less-known offset printing plates. However, they produce quality prints and will soon become the mainstay offset printing plate. They are in three categories, namely:

- Heat : sensitive plates are sensitive to UV light and can be used in any printing process with UV ink.
- Light : sensitive plates are sensitive to different forms of light, including red, blue, purple, and green.
- General plates : these plates don't require chemical processes.

Bottom Line

Offset printing is widely applied in printing newspapers, magazines, stationery, brochures, and most books. Unlike other printing methods, it is economical and produces large volumes with little maintenance.

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