



TRANSILWRAP COMPANY, INC.



Introduction to Screen Printing

From Transilwrap Company, Inc.

To put it simply, screen printing is just like stenciling, but more exact. It uses a rigid frame to support a porous mesh (screen) which, in turn, supports a stencil (design). The stencil lets ink pass through the mesh (print area) and blocks ink everywhere else, to produce an image. A variety of mesh/stencil/squeegee combinations provide a wide range of printing capabilities, thus making screen printing one of the most versatile printing processes known. This same versatility appeals to entrepreneurs in a nearly unlimited number of industries; the wide variety of uses makes screen printing that much more attractive.

Screen printing equipment inventory is as varied as the applications used in this industry. Types of presses include:

Flatbed Press — these presses offer efficient production speeds and excellent registration. Several styles fall into this category.

- a. Clamshell press*** is hinged at the rear, opening like a clam shell to allow for in-feed and removal of printed stock.
- b. Four poster*** has the printing head mounted at each corner, allowing the head to be very precisely raised and lowered vertically. This parallel movement is thought overall to provide tighter registration than the clamshell.
- c. Long stroke press*** is an oversized piece of equipment capable of printing several yards wide by many yards long.

Flatbed presses are usually grouped according to how the substrate is loaded into and taken out of the press.

- a. Semi-automatic:*** substrate is loaded and removed from printing platen by hand.
- b. 3/4 automatic:*** may have automated in-feed or take-off system, but not both.
- c. Fully automatic:*** possesses both automated in-feed and take-off systems.

Web Press — Unlike most screen printing presses, a web press prints on a roll rather than on a sheet. These presses are not as common in the screen printing industry due to mechanical limitations, slow speeds, and higher equipment costs. Only 3% of screen print shops in 2002 used a web press.

Pad Transfer Press — A type of offset gravure printing, pad printing is used to decorate small three-dimensional and specialty items, along with other substrates not well-suited to screen printing. In 2002, 8% of screen print shops used a pad transfer press.

Container Machines — A highly specialized segment of the screen printing industry, container printing involves printing on cylindrical objects, such as glassware, stemware, bottles, cans, and other similar objects.

Sheet Fed Cylinder Press — This piece of equipment is generally thought of as the fastest press for printing flat stock. It's an excellent machine, capable of very high quality screen printing on thin, flexible stock, with production speeds of 2,500 to nearly 4,000 sheets per hour.

Similar to a litho offset press, this press uses a rotating cylinder to hold the substrate while printing; the impression cylinder “grabs” the sheet and rotates through the cycle while the printing screen shuttles at the same speed, just above the cylinder. A stationary squeegee provides contact between the screen and impression cylinder holding the substrate. When the print is finished, the sheet is released, and the cylinder and screen move backward to re-start the cycle.

Types of Substrates:

The diversity of the screen printing industry is no more evident than when you see all the various substrates used in the process. Larger categories, such as point of purchase displays, involve the use of cloth to vinyl to wood, glass, plastic and more. Some of Transilwrap's most widely used screen printable substrates include:

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| <i>1. Styrene</i> | <i>4. Pressure Sensitive Vinyl</i> | <i>7. Polypropylene</i> |
| <i>2. Polycarbonate</i> | <i>5. Flexible Vinyl</i> | <i>8. Rigid PVC</i> |
| <i>3. Polyester</i> | <i>6. Polyethylene</i> | <i>9. Flexible PVC</i> |

Curing Systems:

The final step in the screen printing process is the removal of solvents to cure or “set” the inks. Several types of curing systems are employed by the screen printing industry, the most common being the conveyor type.

This system uses electrically heated hot air in a convection system. Convection dryers use volumes of warm air to remove the evaporating solvents (and for this reason, these are largely used by graphics printers). Some textile screen printers also use convection dryers if they print water-based inks.

Next on the list according to popularity is the UV (ultra violet) system and again, used by graphics printers almost exclusively.

For more information about screen printable substrates from Transilwrap, please call our Customer Service Department at 1.800.321.8544, or contact us via this web site.

Source: SGIA International