

# What is screen printing?

Screen printing is the process of transferring a stencilled design onto a flat surface using a mesh screen, ink and a squeegee. Fabric and paper are the most commonly screen-printed surfaces, but with specialised inks it's also possible to print onto wood, metal, plastic, and even glass. The basic method involves creating a stencil on a fine mesh screen, and then pushing ink (or paint, in the case of artwork and posters) through to create an imprint of your design on the surface beneath.

The process is sometimes called 'silk screening' or 'silk screen printing' and while the actual printing process is always fairly similar, the way the stencil is created can vary, depending on the materials used. Different stencilling techniques include:

- Using masking tape or vinyl to cover the desired areas of the screen.
- Painting the stencil onto the mesh using 'screen blockers' such as glue or lacquer.
- Using a light-sensitive emulsion to create a stencil, which is then developed in a similar way to a photograph.

Designs made using the screen printing technique may use just one shade of ink, or several. In the case of multicoloured items, the colours must be applied in individual layers, using separate stencils for each ink.

## **Step 1: The design is created**

To start, the printer takes the design they want to create on the finished product, and prints it out onto a transparent acetate film. This will be used to create the stencil.

## **Step 2: The screen is prepared**

Next, the printer will choose a mesh screen to suit the complexity of the design, and the texture of the fabric being printed. The mesh screen is then coated with a layer of light-reactive emulsion, which will harden when developed under bright light.

## **Step 3: The emulsion is exposed**

The acetate sheet featuring the design is then laid onto the emulsion-coated screen, and the whole thing is exposed to a very bright light. The light hardens the emulsion, so the parts of the screen which are covered by the design remain in liquid form.

If the final design is going to include more than one colour, then a separate screen must be used to apply each layer of ink. To create multi-coloured products, the printer must use his skill to design each stencil, and line them up perfectly to ensure the final design is seamless.

## **Step 4: The emulsion is washed off, creating the stencil**

After the screen has been exposed for a set time, the areas of the screen not covered by the design will have turned hard. Any unhardened emulsion is then carefully rinsed away. This leaves a clear imprint of the design on the screen for the ink to pass through.

The screen is then dried, and the printer will make any necessary touch-ups or corrections to make the imprint as accurate as possible to the original design. The stencil is now ready to be used.

## **Step 5: The Item Is Prepared For Print**

The screen is then placed on the printing press. The item or garment being printed is laid down flat onto the printing board, underneath the screen.

There are a number of different presses, including manual and automatic styles, but most modern commercial printers will use an automatic rotary carousel printer, as this allows several different screens to work at once. For multicoloured prints, this sort of printer can also be used to apply the separate colour layers in quick succession.

## **Step 6: The ink is pressed through the screen onto the item**

The screen is lowered down onto the printing board. Ink is added to the top end of the screen, and a squeegee is used to pull the ink along the full length of the screen. This presses the ink through the open areas of the stencil, imprinting the design on the product underneath.

If the printer is creating multiple items, then the screen is raised and a new garment is placed onto the printing board. The process is then repeated.

Once all the items have been printed and the stencil has served its purpose, the emulsion is removed using a special washing fluid so the mesh can be reused to create new stencils.

## **Step 7: The product is dried, checked and finished**

The printed product then passes through a dryer, which 'cures' the ink and creates a smooth, colourfast finish. The final product will be checked and washed thoroughly to remove any residue, before being passed on to its new owner.

## **Screen printing Press**

While it is possible to screen print with just a mesh screen and a squeegee, most printers prefer to use a press, as it allows them to print lots of items more efficiently. This is because the press holds the screen in place between prints, making it easier for the user to swap out the paper or clothing being printed.

There are three types of press: manual, semi-automatic, and automatic. Manual presses are operated by hand, meaning they're quite labour intensive. Semi-automatic presses are partially mechanised, but still require human input to swap over the items being pressed, while automatic presses are completely automated and require little to no input.

Businesses that need to print items in large quantities will normally use a semi- or fully automatic press, as this allows faster, more efficient printing and minimises mistakes. Smaller companies, or those who do screen printing as a hobby, might find that a manual table-top press (sometimes called a 'handbench' press) is better suited to their needs.

## **The Inks**

The ink, pigment or paint is pushed through the mesh screen and onto the item being printed, transferring a coloured imprint of the stencil design onto the product.

## **The Silk Screen**

The silk screen in silk screen printing is a metal or wooden frame with a fine mesh fabric stretched over the top. Traditionally, this mesh was crafted from silk thread, but nowadays this has been superseded by polyester fabrics, which offer the same performance for a lower price. The thickness and thread count of the mesh can be chosen to suit the texture of the surface or fabric being printed, with smaller spaces between threads allowing for greater detail in the print.

Once the screen has been coated in emulsion and exposed, it is ready to be used as a stencil. After the screen printing process has finished, it can be washed and re-used.

## **The squeegee**

A squeegee is a rubber blade attached to a long wooden, metal or plastic handle. It's used to push the ink through the mesh screen and onto the surface being printed. The printer will usually pick a squeegee that is a similar size to the frame of the screen, as this will give better coverage.

A firmer rubber blade is better for printing intricate designs with lots of detail, as it ensures all the nooks and crannies in the stencil receive an even layer of ink. A softer, more yielding rubber squeegee is often used when printing less detailed designs, or when printing onto fabric.