

THE MANUFACTURING GUIDES

GRAPHICS AND PACKAGING PRODUCTION

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Notes for Designers

QUALITY Computer-guided processes are high quality and repeatable. A balance has to be struck between larger cutters, which will remove material more rapidly, and definition of detail. Fine lines visible in the water-clear plastic can be reduced with polishing or slower cutting speeds. The quality of hand engraving relies on the skill of the craftsman.

TYPICAL APPLICATIONS Applications include signage, trophies, artwork, precise instruments and high-end packaging.

COST AND SPEED There are no tooling costs, although tools may need to be replaced. Cycle time is moderate, but harder materials and deeper engravings require slower cutting speeds. Labour costs are moderate to high for hand techniques.

MATERIALS Materials include plastic, foam, wood, metal, stone, glass, ceramic and composite.

ENVIRONMENTAL IMPACTS All material that is removed is waste and is not normally recycled. The designer should take into account the source of the stone and method of extraction. The dust produced when carving certain stones can be harmful and so breathing apparatus is required.

Ink fill Engravings can be applied to the reverse side of clear and translucent materials. This improves the visual qualities of the engraving because the finish will be concealed beneath a smooth and uninterrupted surface layer. The visual difference is demonstrated here: the design has been layered by engraving on both the front and the back surfaces.

Filling in with colour visually eliminates any evidence of the cutting operation and has the obvious benefit of colour matching to, for example, a company logo. In addition, layers of clear material can be engraved, filled with paint and then seamlessly bonded to create the appearance of a suspended graphic element within a block of material.



CNC metal engraving Almost any rigid material is suitable for CNC engraving. However, each material requires specific cutters and it is unlikely that one factory will be capable of engraving all types of materials. Zeus! by Greece is for Lovers is made in brass; the graphics are cut into the surface using CNC engraving.

printing plate, such as the cliché used for pad printing, is a type of intaglio.

Planography is the process of applying ink from a flat surface onto paper or another material. This is possible in lithography because oily and watery liquids do not mix easily. Since the development of the transfer process, known as 'offset', in the 1870s it has become the most common commercial printing process for paper and tinsplate packaging.

Stencil printing is the process of masking areas that will not be printed. Screen printing is a type of stencil printing and as a result is very versatile because many types of inks can be used. It is therefore possible to print onto different materials (see right). Risography (page 144) combines the stencil process with digital printing and demonstrates how the boundary between digital printing and conventional printing is rapidly becoming blurred as computer-guided systems are being integrated into all types of presses. Processes that are purely digital (i.e., they do not include printing plates) are ink jet (page 142) and laser printing (page 139). The advantage is that each print can be different with little or no extra cost. The quality of digital printing is very good and the speed is rapidly increasing so that for short print runs it competes with offset lithography.



Greece is for Lovers 'No Sleep Till Hades' collection

Screen printing is versatile and many different types of ink can be used and so it is possible to print the same design directly onto many different materials, such as textile and ceramic. This collection, created by Greece is for Lovers, is single colour screen printed.

Cost and the size of the print run directly impact on the selection of the process. However, the choice of colour, paper and ink are under the control of the designer.

Colour Printed colour is known as either process or spot. Process colours are cyan (blue), magenta (red), yellow and ketone (black), collectively abbreviated as CMYK. All of the colour groups can be reproduced from CMY and K is added for improved contrast and deeper blacks. Spot colours are used to match company logos or special colours, such as metallic, that cannot be achieved by mixing CMYK. Typically, a recognized