

Complex shapes and lattice designs

What can you actually create with paperboard? When it comes to complex shapes and lattice designs, the question might rather be what can't you create? Here are at least three creative dimensions to play with. Beneath the white and smooth surface, you will find all the strengths you require to achieve complex and durable shapes. Try them out!

You can use print, varnish, lamination, embossing or hot foil stamping for the surface design, or just use the white paperboard itself to achieve a highly distinctive structural design. Add your own unique creative dimension to the three spatial dimensions, the four elements of nature, and the five human senses.



Creased, die cut and ready to fold.



What you can achieve with paperboard.



An elegant carton makes its contents taste even better!

Which technique to use?

Creasing, folding, and various cutting methods (die cutting, ram punching or laser cutting) are the basic techniques used to create complex structural designs. Creasing and folding will be discussed in the next section. Here we describe the various cutting methods.

Die cutting

Die cutting is the most general cutting method. The die-cutting tool consists of a cutting edge and counter-die. The tool can be in the shape of a straight line or almost any complex shape you want. Normally the tool is specially designed for a specific shape and paperboard grade. The die-cutting operation can be done at the same time as creasing, and these operations can also be combined with embossing.



Die cutting.



Laser cutting.

Ram punching

Ram punching is a powerful cutting method used to cut large numbers of small shapes such as labels, envelopes and cards. Unlike die cutting, which cuts one sheet at the time, ram punching is used to cut through a whole pile of paperboard. To avoid waste, the paperboard is first cut down to fit the size of the intended shape.

Laser cutting

Laser cutting is the most elaborate cutting method. It permits the finest details and the most complex forms. With the right paperboard almost any pattern can be achieved – only the paperboard sets the limits. The intended design is etched through a copper template, which is positioned over the paperboard sheet. A laser beam then runs back and forth over the template, vaporising the paperboard along the contours of the pattern. A drawback with this method may be that the reverse side is slightly discoloured along the contours of the pattern due to the heat of the laser beam. If you don't want this discolouring to show, you need to cover it with print – but you can also deliberately incorporate it into the design.

Finishing options

Key paperboard features

Which features do complex forms and latticed designs require in the paperboard? You need strength for the sake of formability. Tearing resistance and surface strength are definite musts to accomplish cut edges without cracks, debris or frays. To achieve cut surfaces as white as the paperboard surface itself, you need to use paperboard made solely from bleached pulp. Otherwise, the somewhat darker middle layers will show. Flatness and dimensional stability are crucial for enabling runnable production.



Take extra care when choosing the paperboard.



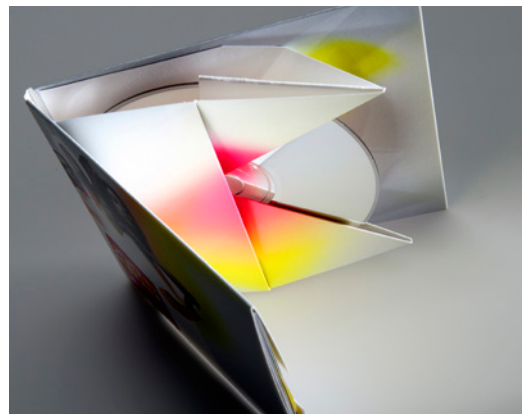
Straight and finely cut lines. This is a simple pattern but a complex design.

Creasing and folding

Unlike paper, paperboard can – and should – be creased before folding. What you gain by this operation, when using a multi-ply paperboard, is the quality expressed by distinct, durable and narrow fold lines, with no disfiguring cracks on the surface of the printed, varnished or laminated folds.



The design deserves distinct and narrow fold lines without cracks.



The multi-layer construction of the paperboard guarantees deep and narrow folds that can withstand frequent opening and closing without cracking.

Deep and narrow folds

It is easy to fold creased paperboard. Without creasing, the surface layers will crack and/or the fold line will be undefined. During the creasing operation the paperboard is weakened along well defined folding lines, which then act as hinges for the folding. To achieve accurate folding with low folding resistance the crease should be deep and narrow – the deeper and narrower, the better. Very thick paperboard requires more than one crease or must be scored before folding.