

## "What do we understand by die-cutting?"

The answer is as follows.

Die-cutting is a process by which the material is compressed and cut with the aid of a die. The process is performed either on a flat-bed die-cutting machine or on a rotary die-cutting machine.

The dies on a flat-bed die-cutting machine are shaped out of steel strip. A rotary die-cutting machine is equipped either with a magnetic cylinder, onto which an engraved die plate is mounted, or with a cylinder which is itself the die-cutting tool, that is to say, the cutting lines are engraved directly into the solid body of the cylinder.

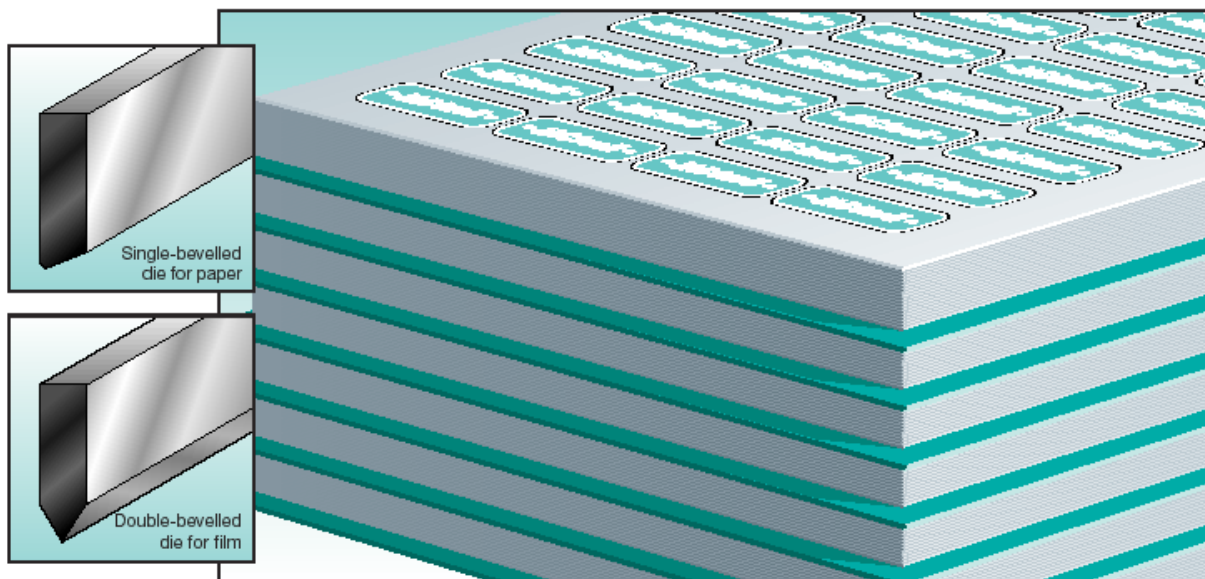
When die-cutting self-adhesive paper, the print carrier and the adhesive are compressed by the die until the paper tears and recoils. In the case of film, the print carrier must be cut more cleanly, as film normally does not have a tendency to tear. For this reason, dies suitable for the die-cutting of paper are not suitable for the die-cutting of film.

The force required to sever a material by the pressing action of the die is considerably greater than the force required for a cutting process using a blade.

Various factors influence the forces which come into play during the die-cutting process:

- The nature of the material to be die-cut
- The configuration of the cutting lines
- The width of the cutting lines

The type of material to be die-cut will determine the type of cutting die to be used. If paper is to be die-cut, a single-bevelled tool is normally used, with an angle of bevel of approx. 80°. If a relatively tough polyethylene film is to be die-cut, a double-bevelled, more acutely angled tool is required.



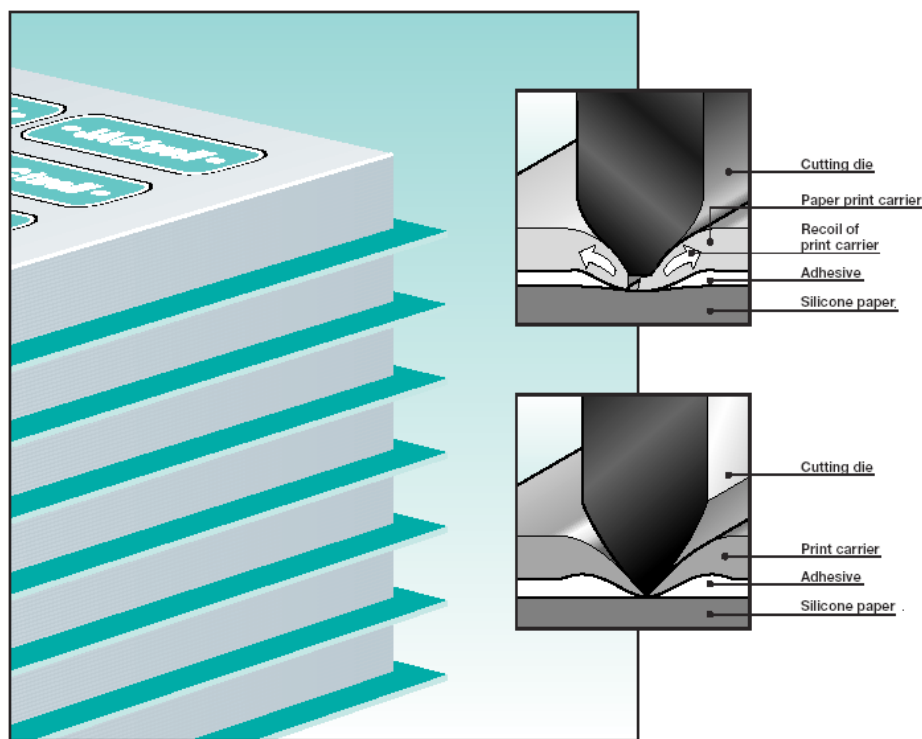
# DIE-CUTTING

Why are different tools necessary?

In order to die-cut a sheet of paper, the paper must be compressed by approximately 60-70% of its original volume. In the case of polyethylene film, the required degree of compression is much higher, namely 90-95%.

A factor which must not be underestimated is the nature of the underlay, this being, in the case of a self-adhesive material, the silicone paper. A soft, compressible, special-purpose silicone paper, such as B 85 or B 145, gives way slightly under pressure, thus necessitating an extremely accurate setting of the force and stroke of the die-cutting tool.

When die-cutting a self-adhesive product, the print carrier and the adhesive layer must be completely severed. If the die-cutting tool penetrates too deeply, it may cut into the silicone layer, or even into the silicone paper. This must be avoided, as subsequent removal of the label may prove difficult.



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